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ATOPIC DERMATITIS (DISSEMINATED NEURODERMATITIS) OF YOUNG ADULTS

ANALYSIS OF PRECIPITATING FACTORS IN ONE HUNDRED AND ONE CASES AND REPORT OF TEN CASES WITH ASSOCIATED JUVENILE CATARACT

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The exact classification of certain dermatoses the chief feature of which is pruritus with lichenification has long been a subject of dispute. Fifty years ago, Vidal [1] discussed the lichens and prurigos, and under the term "lichen simplex chronicus" he distinguished a peculiar chronic condition of certain types of young persons (spare types) who suffered from irregularly recurring episodes of paroxysmal pruritus followed by thickening of the skin, lichenification, excoriated papules and other manifestations involving circumscribed zones or widely disseminated over the body in characteristic locations. He mentioned the tendency for the condition to become worse during the fall and winter and the association or alternation with asthma in certain cases, and he spoke of a constitutional background consisting of an unstable nervous temperament, which was present in most cases. The treatment he advised, in addition to topical remedies, included the use of sedatives, restriction of diet with regard to coffee, tea, cheese, pork and fish, and moderation of activities so as to prevent emotional and physical fatigue. Throughout the ensuing years names have been changed and concepts have broadened, but little has actually been added to the delineation or solution of this mysterious syndrome.

The terms *"prurigo diathésique"* (Besnier [2]) and *"neurodermite diffuse"* (Brocq [3]) were introduced to lay emphasis on the diathetic or

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1. Vidal, Émile: Du lichen (lichen, prurigo, strophulus), Ann. de dermat. et syph. **17**:131-154 (March 25) 1886.

2. Besnier, E. M.: Première note et observations préliminaires pour servir d'introduction à l'étude des prurigos diathésiques (dermatites multiformes prurigineuses chroniques exacerbantes et paroxystiques du type du prurigo de Hebra), Ann. de dermat. et syph. **23**:634-648, 1892.

3. Brocq, L., quoted by Wise.[13]

constitutional factor of the reactivity, on the one hand, and on the essentially nervous disposition, on the other, pruritus being considered as a primary symptom and the gross cutaneous changes as subsequent secondary manifestations in persons predisposed to the condition. The entire subject of the neurodermatoses has been exhaustively reviewed by Alexander [4] in his monograph, more than twenty pages being devoted solely to the details of the histologic picture of lichenification. Alexander, and later Gans,[5] who agreed with Alexander, emphasized that the primary reaction is centered about the blood vessels of the corium as an urticarial manifestation and that the epidermal changes are secondary and do not show the vesiculation which characterizes eczema in the purest sense.

Rasch [6] and later Haxthausen [7]—and in the British symposium presented in 1928, Low [8] and Drake [9]—elaborated on Besnier's concept of prurigo and pointed out its close association with infantile eczema, asthma and hay fever and the reactivity of the skin to specific proteins, particularly as they applied to the condition in children up to the time of puberty.

Rost [10] and Rost and Keller [11] introduced the descriptive phrase "eczematoid with early and late varieties," considering the late variety to affect persons between the ages of 15 and 30 whose condition represented a tardive phase of the exudative diathesis. An associated allergic background was frequently noted, as well as a positive reactivity of the skin to many protein extracts. In a recent article Jülg [12] contended that there is no justification for such a separate distinction apart from the broad classification of "allergic eczema on a constitutional basis."

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4. Alexander, A.: Neurodermitis, in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1927, vol. 6, pp. 371-445.

5. Gans, Oscar: Die Prurigogruppe, in Histologie der Hautkrankheiten, Berlin, Julius Springer, 1925, vol. 1, pp. 242-248.

6. Rasch, C.: Ueber Besnier's Prurigo, Dermat. Wchnschr. **60**:*72* (Jan. 16) 1915.

7. Haxthausen, H.: Le prurigo de Besnier, Ann. de dermat. et syph. **6**:312-328, 1925.

8. Low, R. C.: The Eczema-Asthma-Prurigo-Complex, Brit. J. Dermat. **40**:389-406 (Oct.) 1928.

9. Drake, J. A.: The Asthma-Eczema-Prurigo Complex, Brit. J. Dermat. **40**:407-414 (Oct.) 1928.

10. (*a*) Rost, G. A.: Die Ekzemfrage vom kausalgenetischen Standpunkte, Deutsche med. Wchnschr. **56**:211-213 (Feb. 7); 308-311 (Feb. 21); 350-353 (Feb. 28) 1930; (*b*) in Wise, Fred, and Sulzberger, Marion B.: The 1933 Year Book of Dermatology and Syphilology, Chicago, Year Book Publishers, Inc., 1933, pp. 30-33.

11. Rost and Keller, quoted by Jülg.[12]

12. Jülg, Edith: Ist es berechtigt, das Rostsche "spätexsudative Ekzematoid" aus der Gruppe der Ekzeme auszusondern? Dermat. Wchnschr. **99**:979-984 (July 28); 1005-1009 (Aug. 4) 1934.

Wise,[13] in 1919 and subsequently, stimulated renewed interest in this country in the question of the neurodermatoses, "circumscribed" and "diffuse" in the sense in which Brocq used the term, and insisted on a separation of the entity from lichen planus and from the less clearly differentiated conditions in the eczema group.

During recent years there has been a steadily increasing interest in problems of hypersensitivity and, especially in this country, attention has been focused on the allergic phases of asthma, hay fever and kindred disorders. This is largely due to the stimulus provided by Coca,[14] who elaborated the thesis of atopy to express the peculiar hereditary capacity of certain human beings to manifest untoward reactions to common protein materials, with the development of asthma, hay fever and, sometimes, eczema. Atopy implies the presence in the serum of the circulating blood of atopens or reagins, which bodies possess the property of being able to convey a specific, urticarial reacting sensitivity to normal skin to which they may be transferred.[15]

The cutaneous manifestations that are associated with this syndrome may appear at any age, although usually they are seen in infancy, childhood or early adult life. They must be distinguished from eczema in the true sense, which is a form of acquired contact hypersensitivity to external materials not protein in nature affecting the epidermis primarily and manifested by the production of gross and microscopic vesicles.

The interrelation of asthma, hay fever, infantile eczema and this form of pruritus with lichenification has been emphasized repeatedly by

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13. Wise, Fred: The Neurodermatoses and Pseudo-Lichen: A Consideration of Their Nosological and Clinical Features, J. Cutan. Dis. **37**:590-620 (Sept.) 1919; Pruritus with Lichenification: Further Observations on Neurodermitis of Brocq or Lichen Chronicus Circumscriptus of Vidal, New York M. J. **118**: 688-692 (Dec. 5) 1923. Wise, Fred, and Ramirez, M. A.: Protein Sensitization in Pruritus with Lichenification: Preliminary Report, Arch. Dermat. & Syph. **11**:751-755 (June) 1925.

14. Coca, A. F.: Hypersensitiveness, in Tice, F.: Practice of Medicine, New York, Julius Grinker, vol. 1, 1920, pp. 107-198; The Skin as a Shock Tissue, Bull. New York Acad. Med. **5**:223-231 (March) 1929; The Classification of Allergic Diseases with Reference to Diagnosis and Treatment, J. Lab. & Clin. Med. **18**:219-224 (Dec.) 1932; Specific Diagnosis and Treatment of Allergic Diseases of the Skin: Present Status, J. A. M. A. **103**:1275-1277 (Oct. 27) 1934. Coca, A. F.; Walzer, Matthew, and Thommen, A. A.: Asthma and Hay Fever in Theory and Practice, Springfield, Ill., Charles C. Thomas, Publisher, 1931.

15. Walzer, M., and Bowman, K.: Passive Local Sensitization in Atopic Individuals, Proc. Soc. Exper. Biol. & Med. **28**:425-427 (Jan.) 1931. Walzer, A., in discussion on Peck, S. M.: Eczema of Infancy and Childhood, New York State J. Med. **34**:964 (Nov. 15) 1934. Walzer, M., in discussion on Sulzberger, Marion B.; Spain, W. C.; Sammis, Florence, and Shahon, H. I.: Studies in Hypersensitiveness in Certain Dermatoses, J. Allergy **3**:501 (July) 1932.

Sulzberger and others,[16] although the designation "atopic dermatitis" has not met with a widespread or ready acceptance. Those who wish to preserve the concept of a primary nervous instability as an important part of the background in cases of these disorders still cling to the term "neurodermatitis."[17]

The evolution of atopic dermatitis has recently been aptly described by Hill and Sulzberger,[16e] who brought out the continuity of the various phases of the disorder as they appear in infancy, childhood or early adult life. These authors discussed cutaneous tests and mentioned the propensity toward, and irregularity of, multiple positive reactions in many cases. They expressed the opinion, which workers at the Mayo Clinic share, that the positive reactions individually show poor correlation with the vagaries of the cutaneous phase of the syndrome and an indifferent degree of relation to other associated symptoms, and that such positive reactions probably represent a nonspecific response of the skin of a certain class of persons, the exact importance of which is still unknown.

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16. (*a*) Sulzberger, Marion B.; Spain, W. C.; Sammis, Florence, and Shahon, H. I.: Studies in Hypersensitiveness in Certain Dermatoses: I. Neurodermatitis (Disseminated Type), J. Allergy **3**:423-437 (July) 1932. (*b*) Sulzberger, Marion B., and Vaughan, W. T.: Experiments in Silk Hypersensitivity and the Inhalation of Allergen in Atopic Dermatitis (Neurodermatitis Disseminatus), ibid. **5**:554-560 (Sept.) 1934. (*c*) Sulzberger, Marion B.: A Suggestion for the Classification of Certain Allergic Dermatoses, J. Michigan M. Soc. **34**:78-84 (Feb.) 1935. (*d*) Sulzberger, Marion B., and Rostenberg, Adolph, Jr.: Practical Procedures in the Investigation of Certain Allergic Dermatoses, J. Allergy **6**:448-459 (July) 1935. (*e*) Hill, L. W., and Sulzberger, Marion B.: Evolution of Atopic Dermatitis, Arch. Dermat. & Syph. **32**:451-463 (Sept.) 1935. (*f*) Sulzberger, Marion B., and Goodman, Joseph: The Relative Importance of Specific Skin Hypersensitivity in Adult Atopic Dermatitis, J. A. M. A. **106**:1000-1003 (March 21) 1936. (*g*) Taub, S. J., and Zakon, S. J.: Neurodermatitis Due to Protein Sensitization, J. Allergy **5**:53-59 (Nov.) 1933. (*h*) Figley, K. D., and Parkhurst, H. J.: Silk Sensitivity with Especial Reference to Its Rôle in Atopic Eczema, ibid. **5**:60-69 (Nov.) 1933. (*i*) Peck, S. M.: Eczema of Infancy and Childhood: Neurodermatitis Disseminata (Type II Eczema); Atopy in Eczema, New York State J. Med. **34**:957-964 (Nov. 5) 1934.

17. (*a*) Becker, S. W.: Dermatoses Associated with Neurocirculatory Instability: Generalized and Localized Pruritus, Neurodermatitis, Dyshidrosis, Urticaria and Angioneurotic Edema, Lichen Planus, Neurotic Excoriations, Alopecia Areata, Dermatitis Herpetiformis and Scleroderma, Arch. Dermat. & Syph. **25**:655-682 (April) 1932; (*b*) Commoner Diseases of the Skin, National Medical Monograph, New York, National Medical Book Company, Inc., 1935, pp. 56-90. (*c*) van de Erve, J. M., and Becker, S. W.: Functional Studies in Patients with the Neurodermatoses, J. A. M. A. **105**:1098-1102 (Oct. 5) 1935. (*d*) Pels, I. R.: II. The Neurodermatoses: Commentary on Cutaneous Diseases Associated with Neurotic or Neurogenic Conditions, with Special Reference to Neurodermitis (Review), Internat. Clin. **4**:280-296 (Dec.) 1934. (*e*) Stokes, J. H.: Functional Neuroses as Complications of Organic Disease: An "Office" Technic of Approach, with Special Reference to the Neurodermatoses, J. A. M. A. **105**:1007-1013 (Sept. 28) 1935.

The purpose of this report is to present a summary of 101 selected cases of typical atopic dermatitis affecting adolescent and young adult persons. At the Mayo Clinic one deals most frequently with the adult phase of the syndrome. In most instances the sites involved by predilection were the face, the sides of the neck, the anterior and posterior aspects of the upper part of the trunk and the flexural folds of the extremities. There were all grades of severity to the point of universal involvement, which was present in 18 cases. Circumscribed neurodermite of the eyelids alone, of the nape of the neck, of the elbows, of the knees or of the thighs, which commonly occurs among adults older than those referred to in this paper, was excluded from consideration.

The various clinical features of atopic dermatitis have been so well described [18] that further repetition is hardly indicated. Moreover, space forbids detailed delineation of the histologic studies that were made by biopsy in approximately 20 per cent of the cases, especially in cases of the more generalized forms, wherein differentiation was necessary from contact eczema, lichen planus, universal psoriasis or malignant erythroderma. Microscopic observations were in accord for the most part with those previously described.[19]

SEX, AGE AND DURATION OF SYMPTOMS

Of the 101 patients whose cases form the basis of this report, those with definite seborrhea, fungous infections and pure eczema having been eliminated, 54 were females and 47 males. Of those with generalized involvement, 12 were women and 6 were men. For the most part the patients were young adults; the youngest patient was 13 years old; the oldest, 35. Only 9 patients were more than 30 years of age, the symptoms in these 9 patients being of an average of twelve and a half years' duration and the clinical features of the eruption tending to assume a form that was less typical.

The average patient in this series was aged 22 and had had symptoms since the age of 14, or over a period of eight years. Twenty-three patients had a history of continuous involvement, or of involvement at some period of each year, since infancy or early childhood.

PERSONAL HISTORY OF ALLERGIC HYPERSENSITIVITY

Of the 101 patients whose cases form the basis of this report, 71 had a definite history of eczema in infancy, of past or present hay fever of the seasonal type or of asthma. Infantile eczema was noted in 57 patients, and 23 of these had no record of subsequent hay fever or asthma up to the time of examination at the clinic. Asthma appeared

18. Vidal.[1] Besnier.[2] Brocq.[3] Footnote 16.

19. Alexander.[4] Gans.[5]

in 30 patients, 21 of whom had had infantile eczema; hay fever appeared in 34, 26 of whom had had infantile eczema. Thirteen patients had had manifestations of all three of these associated allergies.

Other conditions which are often associated with the allergic constitution, namely, urticaria, migraine, gastro-intestinal disturbances and vasomotor or hyperesthetic rhinitis, were not included in this study although they were found to be a frequently occurring concomitant symptom in many of the cases.

In his original description of lichen simplex chronicus Vidal mentioned the association of asthma when the skin was diffusely involved. Asthma and hay fever were later mentioned by Besnier as a component of the syndrome of *"prurigo diathésique,"* which term has been carried to the present time through the reports of Rasch,[6] Rost,[10a] Haxthausen,[7] Drake,[9] Low [8] and Bamber [20] and incorporated in the American literature under the name "atopy."

The incidence of a positive personal allergic association in the patients forming the basis of the present study is higher than that which has been reported generally and higher than that given in Bamber's article on children in particular. This may be explained in part by the fact that patients seen at the Mayo Clinic to a certain extent represent a selected group. In the first place, most of the patients, although young, were adults, and they had the advantage of some years of experience with the condition, during which time latent allergies naturally come more or less to clinical fruition. In the second place, the condition in these patients was probably more severe than that which is usually observed in patients seen at dispensaries, as many of the patients who apply for treatment at the Mayo Clinic come from a distance to seek relief and hospital care after having previously exhausted the usual variety of therapeutic resources.

EOSINOPHILIA

In the 53 cases in which differential blood counts were made there was an average eosinophil count of 9.7 per cent. In 23 cases the level was more than 10 per cent, and in 5 of these cases it was more than 20 per cent. The highest eosinophil count recorded was 25 per cent. In the 18 cases of more generalized cutaneous involvement the eosinophil count averaged 14.8 per cent.

CUTANEOUS TESTS

The subject of cutaneous tests and the interpretation of significant reactions obtained in cases of atopic dermatitis has been fraught with

20. Bamber, G. W.: An Inquiry into the Causes of Infantile Facial Eczema, and the Relation of Besnier's Prurigo to This Condition, Brit. J. Dermat. **43**: 279-297 (June) 1931.

controversy. There are no satisfactory data extant, and it will be seen from the evidence presented here that few conclusions can be drawn that will prove to be of practical merit. The intracutaneous method of testing was chosen, at the risk of encountering an added percentage of falsely positive reactions; nevertheless, no reactions were recorded as positive unless pseudopods as well as whealing were obtained. All the patients, observations on whom are included in this summary, were tested save 1, or a total of 100 subjects. In each case there was a definite clinical diagnosis of atopic dermatitis of varying degree. Some patients exhibited dermographia; however, white dermographia was more commonly observed than wheal formation on scratching. Other patients presented such an extensive degree of involvement of the cutaneous surface that no direct testing was feasible. Patients exhibiting one of these two types of reaction were tested by the technic of passive transfer.

Direct intracutaneous tests were made on the skin of the back, arms or legs, and such tests were suitably controlled. Tests were usually made with the following substances: ragweeds; orris; wool, silk and house dust; animal emanations, hair and feathers; assorted foods. Definitely positive reactions to substances in one or more of the groups were obtained in 70 of the patients who were tested. In 29 patients the positive reactions were limited to items within a single group. In 10 there were positive reactions to items in four or more groups. Eleven patients exhibited negative reactions throughout; these patients had no record of associated allergic symptoms in their past or recent history. Positive reactions were distributed in the various groups as follows: ragweed, 32; orris, 25; silk, wool and house dust, 21; animal danders and other emanations, 29; foods, 40.

It seemed unreasonable to suppose that such diversely positive reactions could pertain to the cutaneous manifestations themselves, and an attempt was therefore made to correlate these reactions with the factor of personal allergic association, such as hay fever, asthma or infantile eczema, which appeared in the group as a whole; this, however, met with indifferent success (table 1).

Analysis of the reactions to foods revealed an uncertain agreement between the results of cutaneous tests and symptoms in the individual cases. In many cases in which the reactions to the tests were positive there was no history of intolerance to specific foods, or vice versa, in cases in which there was a history of intolerance cutaneous tests gave negative results for substances other than fish, there being almost invariable agreement between the results of the tests and the positive experience of allergic sensitiveness to fish by the more discriminating observers among the affected patients. The foods ingestion of which not infrequently was attended by symptoms of discomfort in the skin pruritus or actual urticaria included: eggs, chocolate, tomatoes, straw-

berries, milk, fish and sea foods, nuts, pork and corn. According to cutaneous tests, the following foods were more frequently found to be incriminated: cereals, milk, egg white, fish and other sea foods, chocolate, nuts and chicken. Desensitization to foods was not attempted, although various measures of regulating the diet in regard to the elimination of commonly irritating foods were carried out in most cases.

There were 25 strongly positive reactions to orris, 16 of the patients being men and 9 women. The high frequency of reactions to orris is noteworthy, and the predominance of males among the patients affected is contrary to expectations in view of the fact that orris is an ingredient of many of the cosmetics used by women. Five men and 1 woman who reacted positively to orris were given injections intradermally and subcutaneously of orris protein over a period of months for purposes of specific desensitization, but this had no pronounced influence on the course of the disease. In other cases in this group, when treatment was given by nonspecific measures, such as autohemotherapy or injection of boiled milk or of oil of turpentine, the results were equally favorable.

TABLE 1.—*Correlation of Positive Cutaneous Reactions and Personal Allergic Background*

Positive Cutaneous Reactions (70 Cases)	Positive Symptoms (71 Cases)	Agreement Between Positive Cutaneous Reactions and Positive Symptoms, Number of Cases
Ragweed (32 cases)	Hay fever (34 cases)	16
Animal inhalants (29 cases)	Asthma (30 cases)	12
Silk, wool and house dust (21 cases)	Asthma (30 cases)	6
Orris (25 cases)	Asthma (30 cases)	8
Foods (40 cases)	Infantile eczema (57 cases)	28

Reactions to tests with silk were not uncommon.[21] Pruritus and swelling of the skin after contact with silk or wool were almost invariably the experience of the entire group of patients with an atopic background regardless of the reaction by test to silk or wool. In one instance (case 1, table 3) there were appreciable flare-ups on the skin after exposure to silk dust, and, at the same time, a noticeable increase in the cataractous opacities was noted.

In summarizing these results of cutaneous tests, it may be said that definitely positive urticarial reactions (in some cases reagins by passive transfer) were demonstrated in 70 of the 100 cases of atopic dermatitis which were studied by means of such tests. When the reactions were strongly positive on the occasion of one test, they were found to remain so with considerable constancy in the cases in which subsequent tests were made. In 29 of the 70 reactors, the positive reactions were limited

21. Sulzberger and Vaughan.[16b] Figley and Parkhurst.[16h]

to a single type group of allergen. Orris appeared to be the allergen causing the highest incidence of positive reactions, next to the ragweed group.

It is practically impossible to ascribe to a certain allergen that produces a positive reaction the definite responsibility for a certain symptom. There were occasional evidences of positive correlation between allergens that caused reactions and aggravation of symptoms which seemed to indicate that some foods more than others were commonly irritating, for example, eggs, milk, cheese, pork, tomatoes, strawberries, nuts, chocolate and sea foods.

Testing by passive transfer entails a rather complicated technic, and except in cases in which direct testing is not feasible, the method finds little application. In instances in which direct tests and passive transfer were used for the same patient, there seemed to be no appreciable advantage to either method of testing as to specificity or pertinence of the positive reactions obtained when the observations were applied to the solution of the problem in hand.

REACTIONS TO PATCH TESTS

The skin of the average adult with atopic dermatitis is unusually tolerant to external irritants, in contrast to that of persons who manifest an epidermal sensitivity of eczematous type. Contact with wool, and sometimes with silk, may produce an urticarial reaction; however, these materials probably act in the same manner as samples used in percutaneous testing; that is, the irritant penetrates the epidermis to evoke a positive vascular response in the cutis. As a rule there are pruritus, edema and urticaria but no vesiculation.

Stewart [22] described the case of a patient under observation for asthma, urticaria and migraine who was sensitive to nickel and cobalt. There was a reaction consisting of a vesicular patch to tests with both of these metals but not to tests with iron. Stewart aptly described this as an inherent sensitivity of the skin. The same type of reaction to nickel has been mentioned by others (Sulzberger and Goodman [16f]), and it agrees with the experience of workers at the Mayo Clinic. Peck [16i] found in a similar way that the skin of eczematous infants frequently gave a positive patch reaction to feathers. Fifty-five unselected persons in this series were subjected to tests by the application of patches of common cutaneous irritants, an average of 16 tests being employed in each instance. The materials included aqueous solution of potassium arsenite, 0.5 per cent; of nickel nitrate, 0.5 per cent; of mercuric

22. Stewart, S. G.: Inherent Sensitivity of the Skin to Nickel and Cobalt (Allied Elements in Group VIII, Periodic System), Arch. Int. Med. **51**:427-434 (March) 1933.

chloride, 0.1 per cent; of quinine sulfate, 1 per cent; of methyl hydrocupreine, 1 per cent; of paraphenylendiamine, 1 per cent, and also 10 per cent solution of turpentine in oil, 1 per cent solution of phenolphthalein in alcohol, 25 per cent ointment of potassium iodide in petrolatum, 25 per cent ointment of potassium bromide in petrolatum, as well as Pyrethrum, orris and pollen of mixed, short and giant ragweed in powder form. Occasionally, other substances regarded as possibly pertinent to the case under consideration were used in tests. In 9 cases there appeared 1 or more pronounced eczematous reactions of erythema, edema and vesiculation; in 12 other cases there were less severe but none the less definite reactions (table 2).

TABLE 2.—*Summary of Positive Reactions to Patch Tests in 55 Persons*

Substances	Marked	Moderate	Weak
Potassium arsenite	3	3	7
Potassium iodide	3	2	6
Nickel nitrate	3	3	2
Turpentine	1	2	4
Quinine hydrochloride	1	..	2
Resorcinol	1	1	..
Phenolphthalein	1	..	2
Orris	1	1	..
Creosote	1	..	..
Mercuric chloride	..	2	1
Pyrethrum	..	1	..
Methyl hydrocupreine	..	1	..
Potassium bromide	..	..	4
Total	15*	16	28

* The 15 marked positive (vesicular) reactions were obtained on 9 persons.

Many of the weakly positive reactions were characterized by persistent erythema and the appearance of grouped follicular papules; this was particularly evident in reactions to potassium iodide, potassium bromide and potassium arsenite, and frequently that type of response occurred to all three materials in the same patient. The severe vesicular reactions occurred with tests to potassium iodide, potassium arsenite and nickel nitrate chiefly, and in none of the subjects who responded in this fashion was the main feature of the general eruption other than that of chronic lichenification of the lichen of Vidal or the atopic type. Two patients with cataracts exhibited such reactions, one to turpentine and one to both nickel nitrate and potassium iodide. One other patient showed a reaction to nickel nitrate, potassium arsenite and resorcinol, and another reacted to potassium arsenite and diluted creosote. The vesicular responses to resorcinol, quinine and creosote were in harmony with environmental contacts in these 3 cases; this suggested the presence of a superimposed eczema. In none of the cases in which there was a reaction to iodide or arsenic was there a history of the use of these materials in the patient's work or as medicaments. That there were 11 and 14 reactions of all degrees to potassium iodide and to potassium arsenite, respectively, is a peculiar circumstance in view of the fact

that iodides and arsenic are medicaments which are selectively efficacious in the management of kindred conditions, such as asthma, hyperesthetic rhinitis and pruritus, which are often encountered in patients with atopic dermatitis. The reactions just listed, as well as those to nickel and to mercury and turpentine, were considered to be in the nature of a nonspecific response of the predisposed skin (inherent sensitivity) and not as pertinent factors in themselves, which might be considered in causal relationship to the main complaint. The evidence herein submitted indicates that to a certain extent there is a peculiar reactive capacity to certain substances, mostly chemical, which is inherent in the so-called atopic or urticarial skin and which is independent of eczema or contact sensitivity in the true sense.

DISSEMINATED NEURODERMATITIS (ATOPIC DERMATITIS) AND CATARACT

Little attention has been paid in the American literature to the association in young persons of neurodermatitis and cataract, a complication fortunately as rare as it is mystifying. Davis, in 1921,[23] described a case—that of a girl aged 15 who had rapidly maturing cataracts in both eyes of less than a year's duration—in which there was evidently a disseminated neurodermatitis and a long history of asthma and recurring eczema since infancy. Daniel [24] reported 3 cases from the Mayo Clinic in 1935, and these are included in the present summary (cases 1, 2 and 3, table 3). Since that time 7 similar cases have been observed,[25] the patient in each case having well defined symptoms of neurodermatitis with eosinophilia and frequently a history of positive personal and familial allergic associations, of infantile eczema, asthma, hay fever and related conditions and of more or less marked urticarial reactions to cutaneous tests with dusts, foods or animal proteins.

The term "juvenile cataract" has been aptly applied to this condition, for the patient is usually a young adult who has had the typical cutaneous manifestations for some time previously; in none of the reported cases has there been any evidence of a congenital disturbance. The usual

23. Davis, W. T.: The Relation of the Eye and Certain Skin Diseases, South. M. J. **14**:237-241 (March) 1921.

24. Daniel, Ruby K.: Allergy and Cataracts, J. A. M. A. **105**:481-482 (Aug. 17) 1935.

25. Since this article was submitted for publication there have been observed at the Mayo Clinic 4 additional cases of cataract in association with atopic dermatitis; 3 of the patients were females and 1 was a male. The male patient was under the care of physicians at the clinic first in 1934, for treatment of his cutaneous condition, and at that time the eyes were found to be normal. In October 1936 he returned because of recurrence of dermatitis in generalized form, and gross examination revealed a cataract of the right eye, which the patient had noted first a few months previously when the dermatitis had flared.

TABLE 3.—*Association of Disseminated*

Case No., Sex, Date of Birth	Chronic Dermatitis, Onset and Course	Allergic Background			Pre... Hos... The...
		Personal	Familial	Cutaneous Tests	
1 F 1917	Since onset of menses in 1930, at age 13; at times generalized; worse in winter than in summer	Infantile eczema; urticaria 1923-1930; asthma (?); gastrointestinal disturbances (eggs); rhinitis; eosinophilia (15.5 per cent)	Present (mother and father)	Direct and Prausnitz-Küstner, marked positive reactions to food (eggs, chicken) and to dusts (silk)	Few mil... ficial tre... ments
2 F 1918	Since childhood; generalized at times since 1933	Infantile eczema; asthma 1929-1933; eosinophilia (25 per cent)	Present (mother)	Direct and Prausnitz-Küstner; marked positive reactions to foods and inhalants	Few sup... treatme...
3 M 1899	Face involved in 1930; face, neck and arms in February 1934	"Prurigo" of arms and face 1913-1918; rhinitis since 1930; urticaria; eosinophilia (16 per cent)	Absent	Direct and Prausnitz-Küstner, weakly positive reactions; patch, positive reactions to nickel nitrate and potassium iodide	Consid... to face; ... actinob... titis
4 F 1919	Arms involved since 1925; flare-up involving arms, face and neck in fall of 1932, 1933 and 1934; clearing in summer	Hay fever since 1923; rhinitis since 1929	Present (two brothers)	Direct, positive reactions to dusts (ragweed, orris, house dust, etc.); negative reactions to foods	Three or ... mild tre... ments (1...
5 M 1907	Arms involved since infancy, flare-up involving face, neck and arms in 1933	Infantile eczema; asthma 1908-1921; hay fever 1921-1935; rhinitis; urticaria (horse dander)	Absent	Direct, marked positive reactions to ragweed; weak reactions to horse dander, house dust and foods	None
6 M 1911	Face, neck, chest and cubital flexures of arms and legs involved since 1928	Infantile eczema; rhinitis since 1926, polyps removed in 1928; hay fever since 1928	Present (brother, sister and parents)	Direct, marked positive reactions to orris and horse dander; weakly positive reactions to ragweed and milk	Two sup... ficial tre... ments
7 M 1910	Arms involved since 1924; disorder gradually spreading over arms, chest, neck and face (1921); better in summer	Infantile eczema; urticaria; eosinophilia (23 per cent)	Absent	Direct, marked positive reaction to cat hair; less marked reaction to wool; weak reactions to foods; patch, vesicular reaction to turpentine and slight reaction to potassium arsenite	Few sup... ficial tre... ments (1... 1933)
8 F 1910	Face and forearms involved since 1932; clear in summer	(?) Migraine with nausea and vomiting	? Present (mother)	Direct, not done; patch, negative reaction	None
9 F 1903	Face, neck, trunk and folds of arms and legs involved since age 31; at first remissions in summer	Asthma 1927-1929 and 1933-1936; rhinitis	Absent	Direct, multiple marked positive reactions to dusts, rabbit hair, silk, eggs, wheat, etc.; patch, positive reaction to potassium arsenite	Few sup... ficial tre... ments
10 F 1888	Arms involved since childhood; in adolescence, involvement of face, neck, trunk and flexural folds of extremities; persistent	Infantile eczema; hay fever since 1924	Present (mother)	Direct, not done (positive reactions elsewhere previously)	Heavy tr... ment in ... in 1918; ... actinoder... of face ... epitheliom... of lip 193...

		Cataract		
	Onset of Symptoms	Descriptions	General Health
Few mild ficial tre ments	....	Left eye, sudden, April 1933; completely blind in 3 months; right eye, gradual loss of vision since August 1933 (age 16)	11/8/34: Homogeneous grayish white mature cataracts bilaterally, obstructing view of the fundi	Good; basal metabolic rate —4%; blood pressure 110/70; menarche 1932, menses regular
Few sup treatme	ion s)	No symptoms (age 17)	3/7/35: Examination by slit lamp revealed early, veil-like central opacification, anterior and subcapsular in lens of right eye; lens of left eye normal; 4/17/35: opacity in right eye progressive	Underweight; weight 87 pounds (39.5 Kg.); amenorrhea 1 year; basal metabolic rate +4%; blood pressure 110/80
Consid to face actinod titis	1918	Left and right eyes, March 1934; rapid progression (age 35)	September 1935: Marked lenticular opacities, anterior capsular region, both eyes, more in right than in left eye; peripheral vision possible under homatropine hydrobromide; 4/16/36: right eye, linear extraction immature cataract	Very good; basal metabolic rate +6%; blood pressure 110/70
Three o mild tre ments	34	Right eye, blurring, July 1935 (age 16)	October 1935: Left eye normal; right eye, diffuse creamy gray cataract obstructing all view of fundus	Very good; weight 155 pounds (70.3 Kg.); menarche 1932; menses regular
None	1926	Left eye, August 1933; right eye, August 1934 (age 26)	February 1935: Left eye, entire lense opaque; right eye, subcapsular, anterior polar opacity, visible grossly; 11/18/35: left eye, linear extraction mature cataract; cutaneous reactions to lens extract negative	Primary syphilis, 1929; neurorecurrence 1934-1935 treated by malaria; right hemiplegia 1935
Two sup ficial tre ments	1930	Right eye, blurring vision, 1932 (age 21)	July 1935: Right eye, entire lens opaque, mature cataract, fundus not visible; left eye, lens clear as seen by slit lamp examination	Very good; basal metabolic rate +8%; blood pressure 116/70
Few sup ficial tre ments (1 1933)	....	Left eye, blurred vision for several years (age 21)	May 1934: Right eye normal; left eye, few diffusely striated opacities in posterior portion of cortex of lens: vision diminished to 6/30	Excellent; blood pressure 115/70
None	....	Examination on account of headaches (age 22)	January 1933: Right eye normal; left eye, a few posterior cortical (polar) lens opacities, vision 6/12	Good; blood pressure 110/65; normal menses
Few sup ficial tre ments	....	Right eye, cloudiness noted in 1927, progressively worse since; left eye, no symptoms (age 24)	4/21/36: Right eye, mature cataract; left eye, small, central, posterior capsular opacity with scattered diffuse opacities	Fair; questionable signs of old pulmonary tuberculosis; blood pressure 134/90; menarche 1900, menses irregular at first; pregnancy 1924 and 1925
Heavy tr ment in in 1918; actinode of face epitheli of lip 19	....	Left eye, cloudiness, 1921 (age 33); right eye, 1926, progressive; operation elsewhere, left eye, February 1935; right eye, October 1935	April 1936: Thin capsular membrane in both eyes containing free deposits of lens cortex	Good; menarche 1919 (age 16); irregular until curettage 1923; pregnancy 1927 and 1929

causes of presenile cataract appear to be absent.[26] There is no history of endocrine dysfunction in the sense of diabetes or of thyroid or parathyroid insufficiency. Most of the patients are in good health and exhibit no signs of avitaminosis. There has been no record of medication in the form of thallium, naphthalene or dinitrophenol or of the eyes having been unduly exposed to radiant heat, although, of course, in most instances there is evidence of exposure to ultraviolet rays, and sometimes to roentgen rays. However, in this report (table 3) as well as in reports that have been made by other observers there are several cases in which the patient had received no treatment whatever by roentgen irradiation; moreover, there is no relationship between the degree of cataractous opacity and the intensity of irradiation in cases in which patients have received roentgen radiation. In some of the cases in which the cataracts are more advanced little or no roentgen treatment has been given. Similarly, in other dermatologic conditions for which roentgen treatment has been carried out with the greatest enthusiasm, such as acne vulgaris, for example, the association with cataract is practically unknown.

Kugelberg [27] recently made an exhaustive survey of the association of juvenile cataract with scleroderma and neurodermatitis. Scleroderma need not be considered here, although Kugelberg stated that the character of the opacities of the lens are similar to those noted in cases of neurodermatitis. Kugelberg reported 2 cases of neurodermatitis with cataract and abstracted the records of 18 cases of similar involvement reported from various European clinics. In all but 3 cases there was a remarkable uniformity in the appearance of the syndrome in young adults, typical cutaneous symptoms being followed by cataract of a distinct type which proceeded to rapid maturation.

Kugelberg's first case was that of a youth aged 15 who had had "prurigo Besnier" since infancy. His father and two brothers had a similar condition, one of his brothers also having asthma. The patient had signs of delayed puberty and dental dysplasia, but he was in good general health. Cataracts developed in both eyes in his fourteenth year.

The second case was that of a man aged 27 who had symptoms of prurigo, of typical localization, of two years' duration associated with asthma and hay fever. Shortly after the onset of his cutaneous trouble there were noted anterior cortical, subcapsular lenticular opacities in both eyes.

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26. Clapp, C. A.: Cataract: Its Etiology and Treatment, Philadelphia, Lea & Febiger, 1934, pp. 68-81.

27. Kugelberg, I.: Juvenile Katarakt bei Dermatosen: Cataracta Syndermatotica, Klin. Monatsbl. f. Augenh. **92**:484-508 (April) 1934.

A similar relationship between juvenile cataract and neurodermatitis has been reported by Gault,[28] and it is mentioned by Kirby [29] in a discussion of the types of cataract to be distinguished from those occurring in senescence.

The cutaneous manifestations in this group of cases follow the pattern of lichen of Vidal, prurigo of Besnier, neurodermatitis or atopic dermatitis in that there is pruritus with lichenification and excoriations affecting the usual sites of predilection on the face and neck, and sometimes the trunk and the flexural folds of the extremities, with characteristic remissions and relapses. There may at times be universal involvement with paroxysms of nocturnal pruritus and a more or less strongly positive allergic background, both personal and familial, and positive cutaneous reactions.

The lenticular opacities are distinctive; they are usually of insidious onset, although they may proceed from the initial to the late stages of maturation through the short period of three months (cases 1 and 3, table 3). At first the opacities may give rise to no symptoms and may be appreciated only by examination of the lens by the slit lamp microscope (cases 2 and 8, table 3). In 5 of the 10 cases there was a record that the previous examination of the eyes had given normal results. In 4 cases there was only unilateral involvement up to the time of examination of the eyes at the clinic.

According to Benedict,[30] opacification of the lens is best seen by means of the slit lamp through a dilated pupil. The earliest changes appear as granular deposits on the inner surface of the anterior capsule or slightly behind the capsule within the cortex. A diffuse grayish translucency intensifies the light beam through the lens. As the opacification increases, the suture lines that make up the anterior and posterior "Y" become more prominent, giving a feather-like appearance, which becomes fainter and more fimbriated at the extremities. Granular deposits appear at the posterior pole and gradually extend peripherally. They appear dull gray in the direct light beam. As the cataract develops the lens takes on a diffuse grayish appearance, and the details which were obvious in the incipient stage are obliterated. A fully mature cataract is silver gray or light cream and does not reflect a shadow of the iris. The lens capsule is fragile and easily ruptured at operation. The lens cortex is scanty, and the nucleus is firm and of a light amber tint. The cataract is not easily removed by linear extraction because of sclerosis of the nucleus. In this respect it differs from cataracts of

28. Gault: Cataracte névrodermitique, Bull. Soc. d'opht. de Paris, March 1933, pp. 280-284.

29. Kirby, D. B.: The Pathology of Senile Cataract, New York State J. Med. **34**:1003-1008 (Dec. 1) 1934.

30. Benedict, W. L.: Personal communication to the author.

the type that are usually seen after exposure to roentgen rays or to dinitrophenol in patients of approximately the same age as those with cataract associated with neurodermatitis.

Nothing of a definite nature is known in regard to the mechanism that is responsible for the production of this type of cataract. That there is an association between the cutaneous syndrome and the cataract beyond the accident of mere happening can hardly be denied in view of the number of cases which are on record. There has been considerable speculation as to the relation of atopic dermatitis, or neurodermatitis, to allergy, and while the matter is not settled by any means, it would seem from the survey of cases in this report and elsewhere that observers who deny such relationship must bear the burden of proof or offer some more acceptable explanation. The conditions termed vaguely "metabolic disturbances," "endocrine dysfunction" and "sympathetic imbalance" find little justification as causative factors in themselves on the basis of the detailed reports submitted on the patients in this group. Atopic dermatitis undoubtedly represents a form of hypersensitiveness on the basis of a constitutional predisposition, but the relationship to a specific allergen seems not to be so clearcut as is the case in regard to asthma and hay fever. If one assumes that the skin partakes in the reaction of hypersensitivity as an ectodermal structure, then it is logical to include the lens capsule within the same scope in certain cases in which the degree of reactivity is sufficiently severe.

DISTURBANCES IN GENERAL HEALTH

Disturbances in general health, aside from the dermatitis, are absent as a rule. The male patients are robust and broad-shouldered, have small hips and ankles and are of sound but not bulky musculature. Obesity is rare. Vidal spoke of the spare type in contrast to the stockily built as being affected, and recently Brandt [31] has emphasized the same constitutional peculiarities which are frequently encountered in cases of atopic dermatitis. The skin is firm and dry, sometimes exhibiting actual ichthyosis; it is sallow as if the superficial capillaries were constantly in partial spasm, although they are highly responsive to internal and external stimuli by a ready flushing. Stroking the skin more often produces a delayed white dermographia than an urticarial wheal. Although atopic dermatitis frequently coincides, in my experience, with the years of adolescence, there is a striking absence of acne vulgaris in patients with atopic dermatitis.

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31. Brandt, Robert: Die Abgrenzung der Neurodermitis vom chronischen Ekzem auf Grund konstitutioneller Betrachtung, Dermat. Ztschr. **65**:330-338, 1933.

There are no outstanding evidences of disturbance of the glands of internal secretion. In 20 cases in this series in which the patients were young women it was noted that symptoms of atopic dermatitis became evident at the time of the first menstrual period. In many other cases there was a decided aggravation of symptoms once each month for a few days before and during the days of the menses. The flow was scanty more often than profuse, dysmenorrhea occasionally being present. There was actual amenorrhea in only 3 cases. Examination of the urine of these patients revealed normal values for gonadotropic substance but a deficiency in the estrus-stimulating hormone. Not infrequently patients of both sexes exhibited an initiation or a pronounced exacerbation of symptoms during the first year or two of married life. The influence of pregnancy was irregular, proving of benefit with respect to the dermatitis in some patients and aggravating the condition in others.

Estimation of the basal metabolic rate was made in 20 unselected cases. As a rule there was a normal value, which averaged from +7 to −8 per cent; the average high was +15 and the average low −17 per cent. In 3 cases, however, there was decided elevation of the rate at the time of the first examination to +51, +50 and +38 per cent, respectively. There was no evidence of hyperthyroidism, and it was noted that the examination had been made during periods of intense physical discomfort from pruritus and loss of sleep; the dermatitis in each case was of the diffusely disseminated type. Subsequent examination in each case revealed a normal basal metabolic rate.

There were no significant alterations in blood pressure.

Another factor besides the general condition of patients with the syndrome of atopic dermatitis which deserves scrutiny is the state of imbalance of the autonomic nervous system. The interrelation of pruritus and emotional upset is well known; tangible criteria for the estimation of disturbance of nervous balance do not exist, and the opinions that have been expressed in this regard are subject to a variety of interpretations. In 1886, when discussing the disseminated types of lichen simplex chronicus, Vidal[32] stated: "The severe forms of this condition, those which are so stubborn and accompanied by a most intense pruritus, are met with in subjects who have an essentially nervous temperament; they are the stormy persons, impressionable and least able to control the emotions." The term *neurodermite* was coined by Brocq to convey the same impression, and it has persisted to the present time, especially in the foreign, exclusive of the British, literature. With the gradual crystallization of the concept of specific hypersensitivity—with urticarial cutaneous reactions, circulating reagins and evi-

32. Vidal,[1] p. 147.

dence of the constitutional background for the development of various forms of allergy—there has been much argument as to whether the syndrome of atopic dermatitis is a form of anaphylaxis in itself or whether it depends for its activating mechanism on a vague type of neurocirculatory instability which may rest on the basis of a disorder of the autonomic nervous system.

The subject has been discussed from this aspect by Sack,[33] Rogerson,[34] Lapage [35] and others. Becker [36] committed himself almost wholly to the view that there is a primary protoplasmic irritability which is inherent in these patients and that the stresses and strains of present day life combine to bring about the objective signs of a fatigue complex. Stokes [37] described the appearance and behavior of persons he refers to as "diathetic," but he did not minimize the importance of the constitutional background of sensitization in individual cases.

When one surveys the material from the point of view of evidence rather than of speculation, one must admit that while the instability of the vasomotor system may be a contributory factor, especially in the cases of more severe disturbances, it is subordinate and probably secondary to a background of specific hypersensitivity.

TREATMENT

In the cases of the milder disorders symptomatic management of pruritus may be sufficient. Spontaneous remissions occur as a rule. Observers say that there is a tendency for flares to occur, most frequently during the fall and winter. The use of antipruritic salves is helpful; coal tar is usually well tolerated and can be reenforced by ultraviolet irradiation to the point of producing tanning.

The first three or four years after puberty are the occasions of recurrences that are resistant to treatment by local measures. The use of arsenic and roentgen rays is a responsibility which should be thoroughly weighed. Relief of symptoms is prompt under roentgen treatment, but there is usually need for frequent repetition, approaching the upper limit of tolerance.

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33. Sack, W. T.: On the Psychic and Nervous Component of the So-Called Allergic Skin-Diseases and Their Treatment, Brit. J. Dermat. **40**:441-445 (Nov.) 1928.

34. Rogerson, C. H.: The Rôle of Psychotherapy in the Treatment of the Asthma-Eczema-Prurigo Complex in Children, Brit. J. Dermat. **46**:368-378 (Aug.-Sept.) 1934.

35. Lapage, C. P.: Allergy, Metabolism, and the Autonomic Nervous System, Brit. M. J. **2**:985-987 (Dec. 1) 1934.

36. Footnotes 17 *a* and 17 *b*.

37. Stokes, J. H.: Diathetic Eczema: Cutaneous Phase of the Eczema-Asthma-Hay-Fever Complex, M. Clin. North America **15**:279-296 (Sept.) 1931; footnote 17*e*.

Treatment must not be limited to the skin alone. Attention to the general health is important in the building up of physical and emotional reserve. Without the use of cutaneous tests certain principles can be followed in regard to the avoidance of environmental irritants, such as wool and silk dusts, feathers and orris in cosmetics, as well as in regard to diet. Instead of a strict regimen of dietary control, the following foods may safely be interdicted with a fair possibility that for sensitive persons the most common irritants are being removed: eggs, nuts, fish and other sea foods, pork, tomatoes, fresh berries, chocolate, cheese and condiments, spices and coffee. Such a regimen does not entail an appreciable restriction. After a suitable time the diet is gradually and slowly expanded to include these various foods.

Treatment by nonspecific measures, such as autohemotherapy, or the injection of boiled milk or of turpentine, is sometimes beneficial.

In the cases of more advanced disturbances hospital care for from ten to fourteen days at the least to sometimes a period of many weeks is advisable. Such a period of supervised rest often brings the symptoms under control. The moderate use of sedatives is desirable.

Many of the valuable suggestions of Becker [36] and Stokes [37] can be incorporated in such a regimen. Change of environment is sometimes a last resort, whereas it should be considered in many instances in the early stages of the disease. A high, dry and sunny equable climate is, in my experience, the most preferable.

SUMMARY

Atopic dermatitis is a characteristic phase of the syndrome of infantile eczema, asthma and hay fever which appears irregularly and with varying degrees of severity in certain young persons who have a constitutional predisposition to hypersensitivity. The cardinal symptom is pruritus with lichenification, which usually occurs in typical zones of predilection but may involve the entire cutaneous surface; white dermographia is frequently seen.

The ages of puberty and early adulthood are trying periods during which latent symptoms frequently become manifest. Other precipitating factors are ill defined, but among them are: cold weather; dietary indiscretions; exposure to irritating dusts, especially silk and orris; intercurrent infections; physical and emotional stress, and fatigue. Such conditions are poorly tolerated by patients with atopic dermatitis and may combine to upset their state of equilibrium.

While positive reactions to cutaneous tests are frequently obtained, there is an uncertain degree of correlation between specific reactions and the clinical experience of symptoms as related to the skin. Treatment by methods of specific desensitization is not successful; rather the application of topical remedies to the skin for symptomatic relief,

combined with a nonspecific medical regimen consisting of the tempering and avoidance of precipitating factors, is attended in many cases by favorable results.

An unexplained and tragic complication which is sometimes associated with atopic dermatitis is juvenile cataract. Ten cases of such complication are reported in table 3.

ABSTRACT OF DISCUSSION

Dr. Marion B. Sulzberger, New York: It has been a privilege to hear Dr. Brunsting's presentation of this subject, and I was particularly pleased to hear that he almost completely agrees with the concept which my co-workers and I have of the disorder under consideration. For Dr. Brunsting, after making a careful study of extensive clinical material, has been able to confirm every essential observation previously reported. Dr. Brunsting told me privately that he was going to use the term "atopic dermatitis" in describing the disorder. I have suggested this name and urged its employment, for I think that it will prevent a great deal of confusion. Almost all observers now agree that the disorder is associated with hay fever, asthma and infantile eczema, that the patients have eosinophilia and that the family history indicates atopic disturbances. I think that this disorder in children and adults is just a later phase of a certain type of atopic infantile eczema. Therefore, it seems that it would be well to drop all the confusing old names which have been given to this dermatosis. How confusing these old names are becomes evident when one realizes that even Dr. Brunsting has today made use of an ambiguous term. He spoke of the disorder exhibited by his patients as "lichen simplex chronicus" of Vidal. Unless qualified by such terms as "diffusus," "generalisatus" or "disseminatus," the term lichen simplex chronicus refers to Vidal's circumscribed form of lichen, a dermatologic entity entirely different from the one reported on by Dr. Brunsting. It seems to me that one great advantage of the designation "atopic dermatitis" is that the word "eczema" is not used. This disorder is certainly different from contact eczema. The cutaneous changes and the histologic picture are not as in true eczema, and it will certainly be a great satisfaction to take the disorder under consideration finally and definitely out of the trash basket of "eczema." I think that further advance on the road to satisfactory management has been made since it is clearly recognized that in many cases the disorder is due to sensitivity to so-called "protein" allergens. Even though the immunologic approach leaves much to be desired, in some cases some gain has certainly been made since the rôle of specific hypersensitivity has been recognized. In some cases this is quite evident. For example, in cases of the forerunner of the adult form—i. e., infantile atopic dermatitis—it is almost self-evident that the disorder clears up when exposure to certain allergens is eliminated. And I have observed certain cases in adults in which response to elimination of certain foods and inhalants has been equally good—but this result is by no means as common in adults as in infants and children.

I think that Dr. Brunsting is much too optimistic about the value of cutaneous tests in the discovery of the causal agents of bronchial asthma and that therefore he was perhaps inclined to expect too much from such tests in atopic dermatitis. As a matter of fact, in more than 50 per cent of all cases of bronchial asthma one cannot find the offending agent by any known cutaneous test, and in the majority of cases of perennial vasomotor rhinitis and asthma, and in many other presumably

allergic conditions (migraine, etc.), present methods of skin testing are almost useless. Yet, it is well to know that many patients with these diseases can be successfully treated by the elimination of allergens. Positive cutaneous reactions can never prove the causal clinical rôle of an allergen; and, more important still, negative reactions do not conclusively exculpate a substance as a possible cause. The method I try to follow is to test all patients with atopic dermatitis both by the patch and by the scratch method. But I realize that the results of many of these tests are only for my own information and will not mean anything to the patient. I believe that the disorder can best be handled by putting the patients in the most carefully controlled environments, eliminating, as far as possible, all dust-producing and dust-catching substances. Sterilized horsehair mattresses and pillows covered with allergen-proof covers should be used; all drapes should be removed from doors and windows; the carpets should be taken up; if possible, the walls should be so finished that they can be washed, and, in addition to this removal of environmental atopens, the foods which Dr. Brunsting has mentioned should be eliminated. His list agrees almost perfectly with mine. I had written down in my group of culpable foods eggs, fish, wheat and chocolate as primary offenders. Among the inhalants, I have found silk and feathers to be the most dangerous allergens in atopic dermatitis. The neurogenous background undoubtedly plays a rôle in some cases of atopic dermatitis, just as it does in some cases of asthma and hay fever. I believe it has been adequately demonstrated that many general and systemic changes, and certainly the state of the psyche and of the nerves, are capable of exerting profound influences on states of hypersensitivity. Nevertheless, I find that correct and careful local topical treatment, combined with the utmost possible elimination of all disturbing atopens, is more important than anything else and will alone produce excellent results in many cases.

I wish to stress once more that cutaneous tests are not the most important procedures, even in the purely immunologic approach to this disorder. Careful taking of the history and painstaking elimination are better than any amount of skin testing.

DR. W. H. GOECKERMAN, Los Angeles: I think that Dr. Brunsting is to be congratulated on his careful review of this practical and confusing dermatologic syndrome. His paper emphasized the fact that the approach to this type of dermatitis is by no means satisfactory. Yesterday some one casually remarked that the ophthalmologist regards the cataract associated with atopic dermatitis as a deficiency problem. That impressed me more forcibly than anything else which has been said on that subject. I had not known of this until yesterday, but about three years ago through a combination of circumstances I was forcibly impressed by the state of a patient which I did not understand. I was particularly impressed by the abnormal type of nutrition this patient had been living on for many years. At that time I put her on what might be called a modified Hermannsdorfer-Sauerbruch diet. Within a few weeks the disorder cleared up entirely. I did not draw any deductions from this case as to the etiology of this type of eczema. All I intended at the time was to give the young woman adequate nourishment. Since then I have continued using this diet in selected cases and have seen some striking results. I now feel strongly that at least in a certain number of cases of atopic dermatitis that type of etiology should be considered; somehow these patients have not had adequate nutrition.

The thing I wish to emphasize particularly is that patients to whom these remarks apply do not necessarily come from destitute families. I am referring to children who are temperamental and wilful and eat as they please. Often the mothers of these children do not have common sense or do not use the proper

discipline, and the fact does not at once become evident that these children are not properly nourished although they often come from well-to-do-families.

I also wish that this discussion would stimulate some one who is in a position to do so to follow the outlined conception through more thoroughly. Physicians who have large dispensary practices are not necessarily in a position to follow this idea through adequately, for they do not know how the children who come to the dispensary eat unless they go into their homes and observe what they are eating. That was brought home to me forcibly in the experience which I have gradually attained regarding patients with this disorder. I feel that these remarks may refer to only one group of patients with the disease under consideration, and if this group is to be selected the situation will have to be studied carefully before this treatment is started. I think it would be wise to make this a subject for investigation. I have not as yet enough material to make any reasonably definite statements, but I am convinced that further study along the lines suggested is much worth while.

Dr. Fred Wise, New York: I know little about the etiology of cataract, but I wish to ask Dr. Brunsting whether it is possible to produce cataract by constantly rubbing the eyes. Many patients have lost their eyebrows and eyelashes because of this feature of the disease.

The neurogenous element interests me. I think that in every case of atopic dermatitis recourse to a neurologic consultation should be had. Whether the eruption is a result of nervous excitement or whether it is primarily associated with a neurologic abnormality is hard to decide, but I am convinced that the nervous system plays a large rôle in the etiology of that disorder.

Dr. John H. Stokes, Philadelphia: I am glad to hear one so broadly informed on the field of cutaneous allergic disease as Dr. Wise rescue this disease complex from purely allergic interpretation in the strict sense by recognizing its neurogenous component. This does not mean that I do not agree with many of Dr. Brunsting's most important generalizations. No one who deals with the Besnier prurigo-asthma-hay fever complex can sidestep the impressive (numerically and otherwise) part played by the allergic susceptibilities of the patient. It is equally impossible to sidestep the contradictory findings of "allergists" themselves in disease complexes like this—findings hardly attributable to faulty technic or cross-interpretations but more probably due to the presence in the allergic field of large "dark spots" which may represent one thing to an observer studying them from one angle and another to an observer viewing them from another angle. To my mind it is a notable thing that in spite of the great progress made in defining allergic phenomena there is a notable lack of success in defining the allergic state. The nucleus of the allergic state will, I suspect, turn out to be a factorial interplay with forces from the shock structure cell, the distant or the disseminated infection and the nervous mechanism in its relation to endocrine and metabolic control all operating to produce the complex thing now called allergic disease. It is human, of course, to seek direct explanations of phenomena, and the more baffling they are, the stronger is the urge to invoke the direct and seemingly simple mono-etiologic concept, dignified by a label, in order to discharge investigative tension, so to speak. But I am convinced that such charming simplicity relatively seldom penetrates to the core of a causal problem in medicine. Disease is more frequently, perhaps universally, a matter of complex interplay, of multiple etiology, of exciting and predisposing causes, of charges and trigger mechanisms. A man whose eye sees only the trigger of the gun is not only a poor rifleman but a positive danger to clear thinking and to intelligent use of the weapon by others. Likewise, one who swallows a disease whole with the aid of a single etiologic concept will miss the real flavor and meaning of the meal.

He who in considering causes of a disease today does not take a leaf from the notebook of the psychiatrists and try to study and interpret the "total person" will fail to penetrate to the core of the matter in the prurigo-asthma-hay fever complex. I should say of Dr. Brunsting's excellent study that the faces and the poses of his patients, as they were shown in the lantern slides, are as significant as their eruptions and his tables. It is this conviction which leads me to try to see just what Rogerson and Drake are trying to get at in Guy's Hospital, at the instance of Barber, when they study the behavior problems, the psychic environment and the make-up of patients with "neurodermitis" and in a number of these patients clear up the disorder by nervous and mental readjustment and reeducation with no attention to contacts with allergens, salves and similar agents.

Dr. Howard J. Parkhurst, Toledo, Ohio: I think that physicians realize the importance of repeated excoriation as a contributory factor. I believe that not much can be accomplished without the absolute elimination of scratching.

As to cataract, it was once felt that the eye was the tissue of the body most resistant to roentgen irradiation. Later it was felt that in young persons immature cataract could be produced by roentgen radiation, and now the fact that these cataracts occur in some patients who have not received irradiation brings up an important point.

Dr. Earl D. Osborne, Buffalo: I completely agree with Dr. Brunsting, but I wish to ask what importance Dr. Brunsting attached to the positive reactions of patch tests. I think they were of extreme importance if he felt that he was able to clear up the disorder by removing the patients from substances to which they reacted positively.

Dr. Louis A. Brunsting: The point which Drs. Wise and Stokes have brought up about a background of nervous instability is well taken, and I am familiar with the recent work of Rogerson and Drake on this subject. One cannot deny that the elements of chronic fatigue and nervous imbalance must be considered in the proper control of this disorder, but it does not seem likely in my opinion that the nervous background is primarily responsible for the syndrome. In situations of stress or strain probably all the persons present here would manifest hyperhidrosis, dryness of the mouth or perhaps urticaria, but they would not show the reaction of atopic dermatitis unless they were peculiarly predisposed to manifest that type of hypersensitivity.

There are a number of theories which have been brought forward to explain the cause of the cataracts in certain of these patients. Trauma from rubbing the eyelid is not a likely factor, as in some cases the lids were free from dermatitis. Furthermore, in certain instances the earliest signs of cataract occurred in the posterior subcapsular region of the lens.

In regard to Dr. Goeckerman's discussion I wish to say that particular care was taken to have the diet of these patients include foods rich in vitamins, and in many instances the accessory food factors were added. It is my opinion that the cataracts at least are not a manifestation of avitaminosis unless the patient is unable to absorb the vitamins from the intestinal tract, which is sometimes the explanation advanced for the development of pellagra in certain patients with gastro-intestinal disease.

The patch tests were made in order to test the eczematous reactivity of the skin, but no helpful therapeutic suggestions were obtained in this way even in the case of patients who exhibited strongly positive reactions to certain irritants. A positive reaction to phenolphthalein is rare, but I observed a reaction similar to one in this series in a patient with an eruption due to phenolphthalein when the test was made on the site of an involuting plaque.

CUTANEOUS ACTION OF RADIUM IN THE PRESENCE OF A CONSTANT SUCTION

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CINCINNATI

The amount of radium which at the present time is owned by the average hospital or private physician is generally limited, and any method which might increase the efficiency of radium therapy will certainly be of considerable benefit.

In an effort to find such a method it was decided to try the effects of a regulated constant suction, or negative pressure, combined with radium, in other words, of a procedure which would be an adaptation of the dry cup and of Bier's apparatus for producing hyperemia to radium therapy. It was thought that possibly the vascular changes which are assumed to occur with these methods might be of sufficient importance to create differences which could be of value in the surface treatment of malignant disease with radium.

APPARATUS

The apparatus shown by the accompanying diagram was constructed.[1] It consists of a modification of water suction which utilizes ordinary running tap water at the sink. By means of this flow of water coupled with the attached "bleeder" valve and a mercury U-tube manometer, a constant suction, or negative pressure, may be maintained against the skin of the experimental animal. It was found that a suction equivalent to 80 mm. of mercury was sufficient to cause adequate adhesion without too much apparent injury or discomfort. If, as occasionally happened, the animal broke away from the radium or from the nipple the vacuum was changed and the attached electric door bell immediately rang because of its hook-up with the tube. This called attention at once to the defect, and the nipple could be reapplied by the observer. This signal was of especial value when radium was used, as the worker could be in an adjoining room, and useless and dangerous exposure could in this way be avoided.

PROCEDURE

Cancer-free white laboratory mice were used throughout the experiments. Three groups of ten animals each were used. Animals of group A were exposed

From the Department of Surgery of the College of Medicine of the University of Cincinnati and the Cincinnati General Hospital.

1. Mr. Earl Dillon constructed the apparatus and Miss Mary Maciel made the drawing.

to radium alone; those of group B had only suction applied to their shaved sides, while those of group C had radium therapy plus suction. In all the animals a portion of the right side just above the thigh was shaved, and extreme care was taken to insure that the area to be treated was neither cut nor scratched. In the animals on which the radium only was used, it was applied directly to the region and held in place by means of adhesive plaster placed completely around the abdomen. In the other two groups the suction at the rubber nipple was sufficient to keep the animals in position. When tubes containing radium were used, as in the last group, they were placed within the rubber tube, being in direct apposition to the skin.

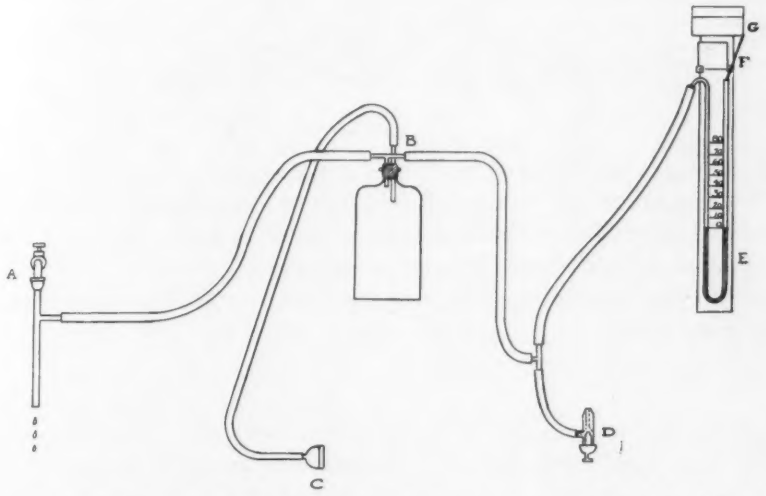

Diagram of apparatus for holding experimental mice: *A*, ordinary sink tap; *B*, jar in which suction is secured by running water from *A*; *C*, rubber nipple (of the kind used on nursing bottles); *D*, bleeder valve; *E*, manometer, the pressure of which is regulated by *D*; *F*, electric wire connection; *G*, electric door bell indicating when mouse escapes from *C*.

AMOUNT OF RADIUM RADIATION

Two tubes containing 25 mg. of radium were always employed in these experiments. The length of one tube was 15 mm. and its external diameter was 3.5 mm. with a platinum filter of 1 mm.; the other tube, made of monel metal, was 11 mm. long and had a diameter of 1.85 mm., and the filter was stated to be equivalent to 0.3 mm. of platinum. The two tubes were always placed side by side. The mice were arbitrarily given 200 milligram hours apiece (50 mg. for four hours) at a single dose, and the animals were examined at intervals of from one week to ten days until the ulcers had disappeared.

RESULTS

The table gives the results on the thirty animals used in the experiment.

The table shows that there is no statistical difference between the results in group A and group B.

Observations on Animals After Application of Radium Radiation and Suction, Radium Only and Suction Only

	Definite "Epithelite Ulcer"*	Very Slight "Epithelite Ulcer" or Scab†	No "Epithelite Ulcer" or "Scab"
A. Suction plus 200 milligram hours of radium.....	7	2	1
B. Radium radiation only (200 milligram hours).....	5	3	2
C. Suction only (80 mm. of mercury).....	1	4	5

* The term "epithelite ulcer" is used advisedly because in all the experimental animals the lesions healed after several weeks.
† The term "slight" designates lesions less than 3 mm. in diameter.

SUMMARY

No apparent difference was noted in the skins of two groups of mice after one group had received 200 milligram hours of radium radiation and the other had received the same dose of radiation plus a constant suction of approximately 80 mm. of mercury.

An apparatus is described whereby experimental mice may be conveniently held.

EFFECT OF IRRADIATION AND IRRADIATION PLUS SENSITIZATION ON YEASTLIKE FUNGI AND RELATED ORGANISMS

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REVIEW OF LITERATURE

Effect of Radiation on Bacteria.—Ever since the experiments of Downes and Blunt in 1877 it has been known that ultraviolet radiation exerts a lethal action on bacteria. Grimm and Weldert [1] employed a quartz mercury vapor arc of 1,200 candle power and exposed clear water containing less than 100 bacteria per cubic centimeter. This was sterilized at a rate of 0.55 cubic meters per hour.

Bovie [2] (1915) studied the germicidal power of radiation of from 250 to 300 millimicrons and found that radiation of wavelengths shorter than 292.5 millimicrons killed bacteria and spores of various fungi in ten minutes but that radiation of a wavelength 2.5 millimicrons longer did not kill them in two hours.

Burge [3] studied the bactericidal action of the quartz mercury vapor lamp on seven kinds of nonfluorescent bacteria and eight fluorescent forms. He found that an exposure of two hundred seconds killed all nonfluorescent bacteria but that in the same time none of the cultures of the fluorescent forms was killed.

Cernovodeanu and Henri investigated the bactericidal action of ultraviolet radiation emitted by a mercury vapor arc. They used emulsions containing 10,000 and 100,000 bacteria per cubic centimeter and found that the action decreased more rapidly than the inverse square of the distance from the source and that the resistance of different species of bacteria varied, Bacillus coli being killed at from fifteen to twenty seconds and Bacillus subtilis in from thirty to sixty seconds.

Browning and Russ [4] found that radiation between 296 and 380 millimicrons from artificial sources was not germicidal.

The work was made possible through the American Association of University Women, which granted me the Latin-American Fellowship for 1932-1933 and 1933-1934. It was done under the direction of Dr. Janet H. Clark, in the Johns Hopkins School of Hygiene.

1. Grimm and Weldert: Chem. Zentralbl. **1**:1454, 1911.
2. Bovie, W. T.: Am. J. Trop. Dis. **2**:506, 1915.
3. Burge, W. E.: Arch. Ophth. **44**:498, 1915.
4. Browning, C. H., and Russ, S.: Proc. Roy. Soc., London, s.B **90**:33, 1917.

Two recent papers by Sonne and Gates (1927 and 1928) have shown the relative sensitivity of micro-organisms to radiation of different wavelengths. Radiation between 313 and 350 millimicrons, if very intense, such as sunlight, may exert some lethal action, but from artificial sources only radiation shorter than 313 millimicrons can kill bacteria. Beginning at approximately 313 millimicrons, the sensitivity of micro-organisms to radiation increases with decrease in wavelength, reaching a maximum between 265 and 280 millimicrons and then decreasing to a minimum at about 240 millimicrons. It was found that there is variation in the susceptibility of individual micro-organisms, due especially to age and metabolic activity. Less individual variation is to be expected among bacteria than among higher forms of life. Simultaneous experiments on the coagulation of protein solutions with ultraviolet radiation showed a close correspondence between the curves for sensitivity of bacteria to irradiation and those of proteins, so that it is generally assumed that micro-organisms are destroyed as the result of the changes produced in the cell protein by wavelengths shorter than 313 millimicrons.

Effect of Radiation on Yeast and Other Fungi.—It has been shown also that ultraviolet radiation shorter than 313 millimicrons kills yeast and other fungi. As most investigations have been qualitative, little is known about the relative sensitivity of yeast, fungi imperfecti and bacteria. However, Clark and Peña Chavarría [5] found that while B. coli is killed with 0.2 units,[6] it takes from 2 to 20 units to kill different types of Trichophyton and sixty minutes to kill the pigmented fungus Montoyela which is the cause of the tropical disease carate, or pinta.

It is obvious from these results that it may take a fairly long period of irradiation to destroy fungi, even when plated on the surface of solid culture mediums. The clinical value of ultraviolet irradiation is therefore dubious, although some investigators report success in the treatment of ringworm and similar diseases with the quartz mercury vapor lamp (Ferguson [7] and Jacobson [8]).

Penetration of Ultraviolet Radiation.—Ultraviolet radiation short enough to injure micro-organisms such as yeast and fungi imperfecti is readily absorbed by the constituents of living matter. Studies have

5. Clark, J. H., and Peña Chavarría, A.: Am. J. Hyg. **4**:639, 1924.

6. The lithopone unit was used, which is roughly equivalent to a minimal erythema dose and is equal to the zinc sulfide unit used in the experiments reported in the present investigation.

7. Ferguson, John Bell: The Quartz Mercury Vapor Lamp, New York, Paul B. Hoeber, Inc., 1927.

8. Jacobson, H. P.: Fungous Diseases, Springfield, Ill., Charles C. Thomas, Publisher, 1932.

been made of the penetration of radiation into the skin, and the following tabulation indicates the increase in absorption in the ultraviolet region.

Wavelength, millimicrons.....	436	366	313	302	297	289
Radiation transmitted by skin 0.1 mm. thick, percentage.....	59	49	30	8	2	1.01

Since the rapidly lethal rays of short wavelength do not penetrate more than 0.1 mm., they are not effective clinically except for superficial infection of the skin. Consequently, if the skin is infected with pathogenic fungi radiation of short wavelength may affect the surface cells but does not penetrate deep enough to destroy all the invading pathogenic organisms.

Sensitization to Visible Light.—It has been stated (Clark[9]) that visible light ordinarily produces no photochemical changes in living cells, except in the retina, but it has been possible to sensitize living cells with certain dyes, as a photographic plate is sensitized, producing an abnormal condition in the cell so that it can be affected by visible light. This phenomenon, discovered accidentally by Raab, has been called photodynamic sensitization. Von Tappeiner, Jodlbauer and their co-workers discovered that many substances can act as sensitizers, fluorescein and its derivatives being especially potent.

Bacteria, protozoa, enzymes, ferments and the various substances concerned in immunity have been sensitized to the action of visible light (Sellards[10]). The erythema produced in the skin of larger animals by ultraviolet irradiation is so extensive that when these animals have been sensitized to visible light with hematoporphyrin exposure to visible light results in death (Hausmann, and Rask and Howell[11]).

The sensitizing reaction of a dye is specific. Eosin (tetra-bromfluorescein) has been considered to be a sensitizer for all cells and chemical substances. Mercurochrome (di-bromoxymercurifluorescein) has held a place of importance as an antiseptic, but there is no record in the literature of its value as a sensitizer.

Each sensitizer makes cells susceptible to visible light or radiation in the region of its own absorption bands, eosin to wavelengths shorter than 550 millimicrons, erythrosin to wavelengths shorter than 560 millimicrons and methylthionine chloride to wavelengths in the red and yellow regions.

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9. Clark, Janet H.: J. Optic Soc., America **21**:240, 1931.

10. Sellards, A. W.: J. M. Research **38**:293 (July) 1928.

11. Hausmann, W.: Grundzüge der Lichtbiologie und Lichtpathologie, Berlin, Urban & Schwarzenberg, 1923, p. 63. Rask, E. N., and Howell, W. H.: Am. J. Physiol. **84**:363, 1928.

As eosin sensitizes to visible light of wavelengths shorter than 550 millimicrons and as these rays penetrate some distance into the skin, the erythema produced by eosin and visible light is deep, whereas that due to ultraviolet radiation shorter than 313 millimicrons is superficial, reaching to a depth of only about 0.1 mm.

There should be, therefore, a greater possibility for clinical treatment of cutaneous infection with pathogenic fungi and yeastlike fungi by means of visible light in the presence of a sensitizer than by means of ultraviolet radiation. Von Tappeiner carried out experiments with visible light and sensitizers in the treatment of certain cutaneous infections which gave indication of success. Clark and Peña Chavarría showed that ringworm can be readily cured by exposure to visible light after local sensitization of the infected area with eosin.

The investigation reported in this paper was undertaken in order to determine what dyes sensitize pathogenic yeastlike organisms and fungi to visible radiation. A potent sensitizer could be used clinically in connection with visible light in the treatment of infections caused by these organisms.

TECHNIC

Mediums.—Most of the experiments with fungi were made with solid mediums, such as Sabouraud's dextrose or maltose agar. The first experiments which my co-workers and I carried out were made with Sabouraud's medium, but after it was found that the action of light could not affect some of the cells protected by other cells, we decided that a suspension in fluid medium would give more uniform results.

In dextrose broth at p_H of 7 a good uniform growth could be obtained within twenty-four hours with incubation at 34 C. This method facilitated the transfer of fungi such as Epidermophyton and produced a uniform suspension of what could be called young colonies, which were easily transplanted to another medium, without the danger of transferring a part of the culture that might not grow.

Exposure to the light could not be made in the dextrose broth, because the amount of protein present inhibited completely the action of rays of short wavelength on the organism, owing to absorption. One-tenth cubic centimeter of a twenty-four hour culture in 10 cc. of distilled water gave better results. With this method a definite number of cells were exposed (2,000,000 per cubic millimeter), and by shaking the culture and moving the plate during exposure a fairly uniform irradiation of all the cells could be obtained.

Exposures made in tubes were not reliable, owing to the very small surface that received the light directly. Most of the organisms dropped to the bottom of the tube no matter in what position it was irradiated. Petri dishes offered a better and uniform thickness of the suspension. The dye was added a few minutes before exposure. When suspension in distilled water was used, the dye was added to the water before the culture, and the two were mixed before exposure.

The following technic was adopted after several experiments:

Organisms.—A twenty-four hour culture of Saccharomyces cerevisiae strain 280, another of Monilia albicans strain 349 and a third of Epidermophyton interdigitale were used in the course of these experiments.

The cultures were grown in dextrose broth (1 per cent peptone, 0.3 per cent meat extract, 0.5 per cent sodium chloride and 1 per cent dextrose), with a p_H of from 7 to 7.2, except when a special p_H was indicated.

In the first set of experiments the organisms were exposed in the broth without dilution. In the second set the broth or culture was diluted with distilled water, 0.1 cc. of the culture in 10 cc. of distilled water.

Controls of two kinds were always used—organisms plus dye with no exposure and organisms exposed without dye.

Subcultures of 0.1 cc. of the irradiated material in dextrose broth were incubated at the optimum temperature of 34 C. in order to determine the results of irradiation. These subcultures were observed after twenty-four, forty-eight and seventy-two hours, and the tubes were kept at the optimum temperature for as long as two weeks if negative results were obtained. As a rule the growth appeared in forty-eight hours.

Preparation of Cultures.—One-tenth cubic centimeter of the twenty-four hour culture was placed in 10 cc. of distilled water, which contained 0.1 cc. of the 1:100 dilution of the sensitizer.

Radiation Used.—In testing the effect of ultraviolet radiation a quartz mercury vapor arc[12] was used at a distance of 18 inches (45 cm.). The intensity of the ultraviolet radiation shorter than 313 millimicrons was measured by the rate of darkening of zinc sulfide. This method has been described in detail by Clark[9]; 1 zinc sulfide unit, or the ultraviolet energy necessary to darken zinc sulfide to a 50 per cent reflection factor, is approximately equivalent to a minimal erythema dose for human skin. In other words, the energy necessary to give 1 zinc sulfide unit in the region of wavelengths of from 313 to 289 millimicrons was found by Clark to be equivalent to 720,000 ergs per square centimeter.

In the preliminary experiments yeast and other fungi were exposed also to radiation from a carbon arc lamp and from a sun lamp,[13] and exposures were made in water and broth and on Sabouraud's medium in Petri dishes. However, as the final results were obtained with exposures in water in Petri dishes under quartz or glass, only these experiments will be given in detail.

As the mercury vapor arc is weak in visible radiation, cultures sensitized to visible light were exposed to sunlight. The intensity of visible radiation was measured in foot-candles by means of a Weston photronic cell and the exposure given in terms of foot-candle minutes.

Sensitizers.—The following substances were used as sensitizers: (1) eosin Y (a tetra-bromfluorescein), with a dye content of 68 per cent in a dilution of 1 per cent;[14] (2) methylthionine chloride, and (3) mercurochrome, the common product sold in the drug stores, containing 2 per cent of di-bromoxymercurifluorescein.

Other sensitizers used were erythrosin, chlorophyll and fuchsin. Apparently, these have no effect as sensitizers of the fungi studied.

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12. The quartz mercury vapor arc lamp was manufactured by the Hanovia Chemical & Mfg. Co., Newark, N. J.

13. General Electric Sun Lamp (type S-1), obtained from the General Electric X-Ray Corporation, Chicago.

14. Obtained from Coleman & Bell Company, Norwood, Ohio.

RESULTS

Ultraviolet Radiation Shorter Than 313 Millimicrons.—As shown in table 1, when the organisms were exposed to radiation from the mercury arc in an open dish and were rotated, the lethal dose for yeast strain 280 was 2 zinc sulfide

TABLE 1.—*Results of Experiments with Ultraviolet Irradiation of Three Types of Fungi*

Organism	Procedure	Type of Lamp Used	Distance, Inches	Time, Min.	Intensity, Zinc Sulfide Units	Results of Subculture	Lethal Dose
Yeast strain 280 (experiment 17)	10 cc. distilled water plus 0.1 cc. culture in Petri dish with no cover	Mercury vapor arc	18	6	....	Negative	.....
				7		Negative	
				8		Negative	
				9		Negative	
	Control (no exposure)	.....	..	..	....	Positive	
Yeast strain 280 (experiment 18)	Same as in experiment 17	Mercury vapor arc	18	3	....	Negative	.....
				4		Negative	
				5		Negative	
				6		Negative	
	Control (no exposure)	.....	..	..	....	Positive	
Yeast strain 280 (experiment 19)	Same as in experiment 18	Mercury vapor arc	18	1	0.66	Positive	
				2		Positive	
				3	2.00	Negative	
				4		Negative	
				6		Negative	
							2 zinc sulfide units
	Control culture covered with glass	.....	..	10	....	Positive	
M. albicans strain 349	10 cc. distilled water plus 0.1 cc. of 24 hour culture in Petri dish with no cover; rotation	Mercury vapor arc	18	3	2.00	Positive	
				4		Positive	
				5	3.30	Negative	
				6		Negative	
				7		Negative	
				8		Negative	
				9		Negative	
				10		Negative	
				11		Negative	
				12		Negative	
				15		Negative	
				18		Negative	
				20		Negative	3.3 zinc sulfide units
	Control (no exposure)	.....	..	..	....	Positive	
Fungus strain 1; interdigitale	From 10 to 15 cc. distilled water in Petri dish plus about 5 to 10 colonies of 24 hour culture of the fungus in dextrose broth; dish not covered and rotated	Mercury vapor arc	18	1	0.66	Positive	
				2		Positive	
				3	2.00	Positive	
				4		Positive	
				5	3.30	Negative	
				6		Negative	
				7		Negative	3.3 zinc sulfide units
				8		Negative	
				9		Negative	
				10		Negative	
	Control (no exposure)	.....	..	..	....	Positive	

units, for M. albicans strain 349, 3.3 zinc sulfide units and for E. interdigitale, 3.3 zinc sulfide units. These results were checked in other experiments. A series of experiments carried out in October 1933 showed that for yeast strain 280 the lethal dose was irradiation for from three to four minutes at 18 inches (from 2 to 2.64 zinc sulfide units) and for M. albicans strain 349 and E. interdigitale from 4.5 to 5 minutes at 18 inches (45 cm.) (from 3 to 3.3 zinc sulfide units).

Visible Light Plus Sensitization.—The results obtained when these organisms were sensitized and exposed to sunlight are given in table 2. The results were irregular, owing to the variations in the intensity of the sunlight during exposure, but it is apparent that eosin did not appreciably sensitize yeast strain 280 to visible light, as the culture was not killed by an exposure of 273,000 foot-candle minutes. Mercurochrome in a dilution of 1:10,000 sensitized yeast strain 280, so that it was killed by an exposure of approximately 87,600 foot-candle minutes, and methylthionine chloride, so that it was killed by an exposure of approximately 146,000 foot-candle minutes.

TABLE 2.—*Effects of Exposure of Sensitized Yeast Strain 280 to Visible Radiation (Sunlight Through Glass)*

Date of Experiment	Procedure	Sensitizer	Source of Radiation	Intensity, Foot, Candles	Time, Min.	Intensity, Foot, Candle Min.	Results of Subculture	Lethal Dose
May 1933 (experiment 23)	10 cc. distilled water plus 0.1 cc. of a 24 hour culture in a Petri dish covered and rotated	0.1 cc. of eosin, 68% dye content	Sun	.....	15	.....	Positive	
					30		Positive	
					45		Positive	
					60		Positive	
	Control (no exposure).....						Positive	
October 9	Same as in experiment 23	Eosin, 1:10,000	Sun	7,250	15	.....	Negative	
October 13	Same as in experiment 23	Eosin, 1:10,000	Sun	5,800	10	58,000	Positive	
					20	116,000	Negative	
					30	174,000	Negative	
October 25	Same as in experiment 23	Eosin, 1:10,000	Sun	7,300	5	36,500	Positive	
					8	58,400	Positive	
					10	74,000	Positive	87,600 foot-candle minutes
					12	87,600	Positive	
					15	109,500	Negative	
	Control (no exposure).....						Positive	
October 27	Same as in experiment 23	Eosin, 1:10,000	Sun	5,460	10	54,600	Positive	
					15	81,900	Positive	
					20	109,200	Positive	
					25	136,500	Positive	
					30	163,800	Positive	
November 1	Same as in experiment 23	Eosin, 1:10,000	Sun	3,640	30	109,200	Positive	
					45	163,800	Positive	
					60	218,400	Positive	
					75	273,000	Positive	
November 20	Same as in experiment 23	Eosin, 1:10,000	Sun	5,660	20	113,200	Positive	Greater than 339,600 foot-candle minutes
					30	169,800	Positive	
					45	254,700	Positive	
					60	339,600	Positive	

Two sets of tubes were used as controls. The organisms plus dye which were not exposed were not killed, and the organisms exposed to the light in the Petri dish for an hour and a quarter with no dye were not injured. Both sets of control cultures grew well.

Similar results were obtained with M. albicans strain 349 (table 3). Eosin failed to sensitize this organism to visible light, and an exposure of 424,500 foot-candle minutes was harmless. When the same organism was sensitized with methylthionine chloride the lethal dose in one day decreased to an exposure of 163,800 to 169,800 foot-candle minutes, and on another day to an exposure of

between 218,400 and 273,000 foot-candle minutes, so that the lethal dose can be taken as an exposure of approximately 200,000 foot-candle minutes. Mercurochrome proved to be the best sensitizer, as the lethal dose was an exposure of from 60,000 to 72,500 foot-candle minutes.

TABLE 3.—*Results of Exposure of Sensitized Monilia Strain 349 to Visible Light (Sunlight Through Glass)*

Date of Experiment	Procedure	Sensitizer	Source of Radiation	Intensity, Foot-Candles	Time, Min.	Intensity, Foot-Candle Min.	Results of Subculture	Lethal Dose
Nov. 1, 1933	10 cc. distilled water plus 0.1 cc. of a 24 hour culture in a Petri dish covered and rotated	Eosin Y, 0.1 cc.	Sun	3,640	30	109,200	Positive	
					45	163,800	Positive	
					60	339,600	Positive	
					75	273,000	Positive	
	Control (no exposure)						Positive	
November 20	Same as in first experiment	Eosin Y, 0.1 cc.	Sun	5,660	30	169,800	Positive	Greater than 424,500 foot-candle minutes
					45	254,700	Positive	
					60	339,600	Positive	
					75	424,500	Positive	
	Controls						Positive	
October 27	Same as in first experiment	Methylthionine chloride	Sun	5,460	15	81,900	Positive	
					20	109,200	Positive	
					25	136,500	Positive	
					30	163,800	Positive	
	Controls						Positive	
November 1	Same as in first experiment	Methylthionine chloride	Sun	3,640	30	109,200	Positive	
					45	163,800	Positive	
					60	218,400	Positive	
					75	273,000	Negative	
	Controls						Positive	
November 20	Same as in first experiment	Methylthionine chloride	Sun	5,660	30	169,800	Negative	
					45	254,700	Negative	
					60	339,600	Negative	
					75	424,500	Negative	
	Control culture plus dye not exposed						Positive	
	Culture without dye exposed						Positive	
October 27	Same as in first experiment	Mercurochrome	Sun	5,460	15	81,900	Positive	
					20	109,200	Negative	
					25	136,500	Negative	
					30	163,800	Negative	
	Controls						Positive	
November 1	Same as in first experiment	Mercurochrome	Sun	3,640	20	72,800	Negative	
					30	109,200	Negative	
					40	145,600	Negative	
					50	1,820	Negative	
	Controls						Positive	
November 20	Same as in first experiment	Mercurochrome	Sun	5,660	10	56,600	Positive	
					15	84,900	Negative	70,000 foot-candle minutes
					20	113,200	Negative	
					30	169,800	Negative	
	Controls						Positive	

In the experiment with inguinale the intensity in terms of foot-candles was not measured, but the organism was killed by an exposure of one hour when not sensitized and by an exposure of thirty minutes when sensitized with eosin or mercurochrome.

COMMENT

Most of the work with light must be considered to be preliminary and a study of the best technic that can be applied uniformly. In order to obtain uniform results and to draw any definite conclusions, the methods must be standardized.

The most striking result we obtained was the decidedly inhibitory action of mercurochrome on yeast, Monilia, Trichophyton and Epidermophyton in the presence of visible light. Mercurochrome is a powerful sensitizer for this type of fungus.

Before referring to the results mentioned some factors of importance in the irradiation of fungi must be considered.

Cells of yeast and fungi are, as a rule, in clumps and do not separate easily as bacterial cells do. The chemical composition of these organisms is not perfectly known; consequently, one cannot decide what portion of the light is absorbed by the cells directly exposed to its action and how many of the other cells are protected by this absorption. A uniform suspension of cells as separated as possible must be prepared before irradiation.

Incubation of cultures exposed on solid mediums usually produces inhibition of growth when only one colony in the center of the plate is exposed. In streak plates, even after long irradiation, some colonies protected from the light develop at the edges of the plate, where irradiation cannot be complete.

When a suspension of cultures in dextrose broth is placed in the center of a plate containing Sabouraud's medium the protein of the broth protects the fungus cells; uniform results cannot be obtained, and long irradiation is required to produce any effect.

In the experiments with sensitizers the use of fluid mediums is more advantageous than the commonly used dextrose or maltose agar of Sabouraud. As stated before, Sellars considered that in sensitization the organisms must be in contact with the sensitizer during exposure. Even when the dye is added to the culture medium the organisms growing on the surface are not in direct contact. In the fluid medium the dye in solution affects every cell in suspension.

We used three different types of organisms in these experiments: true yeast, which forms endospores; Epidermophyton, which forms spores and well developed mycelia, and Monilia, which does not form spores. Trichophyton and Epidermophyton grow well in dextrose broth after incubation for twenty-four hours at 34 C., while in solid mediums they require from six to seven days at least to grow as well as in the fluid medium. By use of cultures incubated for the same length of time and at the same temperature vegetative cells of the same type were always exposed, although three kinds of organisms were employed.

We found that the acidity of the culture medium does not affect the action of light on the organisms. Exposure in a medium with a p_H of 4.4 gave the same results as exposure in a medium with a p_H of 7.2.

Yeast and other fungi are readily killed by ultraviolet radiation (3 zinc sulfide units) when exposed in water but are not killed by radiation longer than 313 millimicrons, except in the presence of sensitizers.

Eosin has been considered to be a universal sensitizer. In the experiment we used a 1 : 100 solution in distilled water of a product [14] with a dye content of 68 per cent in the powder form, and the results as compared with those obtained with other sensitizers were not striking. The yeast (brewers' yeast) and Monilia sensitized with eosin produced good growth in the subcultures after exposure of an hour to the visible light from the sun (from 300,000 to 400,000 foot-candle minutes). The two controls, sensitized organisms which were not exposed to light and irradiated organisms with no dye, gave good growth.

Trichophyton is slightly more sensitive to the action of eosin and visible light, being killed in thirty minutes by exposure to sunlight. This confirms the experiment of Clark and Peña Chavarría with other types of Trichophyton. The Trichophyton or Epidermophyton we used was one of the nonpigment-forming species.

Methylthionine chloride was used in a dilution of 1 : 100,000. It gives an intense dark color in the lower dilutions, which we thought might interfere with the action of the light. Experiments performed later with a dilution of 1 : 10,000 showed that there was no difference in the action of the two dilutions.

The intensity of the light has a great influence on the action of methylthionine chloride as a sensitizer. On a clear day with sunlight of an intensity of 7,240 foot-candles, yeast and Monilia were inhibited by exposures of fifteen to twenty minutes. On a fairly clear day with sunlight of an intensity of 5,800 foot-candles the same organisms were killed after exposure of forty-five minutes. Calculated in terms of foot-candle minutes, the lethal dose was 146,000 foot-candle minutes for yeast strain 280 and 200,000 foot-candle minutes for M. albicans strain 349.

A nonpigment-forming strain of Epidermophyton or Trichophyton was inhibited by exposure for thirty minutes when sensitized with eosin or methylthionine.

The most interesting results were obtained with mercurochrome. Eosin, methylthionine chloride or mercurochrome had no effect on yeasts, Monilia, Epidermophyton or Trichophyton in vitro if the cultures were incubated without exposure to visible light. Eosin Y in a dilution

of 1:100 in dextrose broth seemed to produce stimulation of growth, especially if the cultures were incubated at 34 C. Monilia, yeast, Epidermophyton and Trichophyton grew luxuriantly in dextrose broth which contained mercurochrome in a dilution of 1:500. Subcultures from tubes which contained a 1:500 dilution of methylthionine chloride plus 0.1 cc. of the culture gave good growth after incubation for twenty-four hours at 34 C. It was necessary to make cultures in the experiments with methylthionine chloride because the intense color of the dilution made the reading of the growth difficult. Subcultures in dextrose broth were made by taking 1 cc. of the culture plus the dye after optimum incubation. Eosin and mercurochrome were used as sensitizers in dilutions of 1:10,000, and methylthionine chloride was employed in dilutions of 1:100,000 and 1:10,000. After several exposures under different conditions it was found that mercurochrome plus a short exposure to visible light completely inhibited the growth of yeast, Monilia, Epidermophyton and Trichophyton. The lethal dose was 87,600 foot-candle minutes for yeast strain 280 and 70,000 foot-candle minutes for M. albicans strain 349.

A patient with onychomycosis was treated with mercurochrome and sunlight radiation partially focused by a glass lens for fifteen minutes. The condition was greatly improved after the first treatment and was apparently cured after the second. A third treatment was given after two weeks, although no relapse had occurred.

CONCLUSIONS

1. Ultraviolet rays shorter than 315 millimicrons are rapidly lethal for yeast, Monilia, Epidermophyton and Trichophyton. The lethal dose is approximately 3 zinc sulfide units. Rays longer than 315 millimicrons (visible light and near ultraviolet radiation) do not inhibit the growth of yeast, Monilia, Epidermophyton and Trichophyton.

2. Eosin plus visible light do not sensitize yeast and Monilia to visible light (sunlight). Trichophyton is slightly more sensitive, being inhibited by exposure of thirty minutes in the presence of eosin. The strain used was nonpigment forming.

3. Methylthionine chloride used as a sensitizer inhibits the growth of yeast, Monilia, Trichophyton and Epidermophyton, the lethal dose being an exposure of approximately 200,000 foot-candle minutes to visible radiation.

4. Mercurochrome is the best sensitizer for yeast, Monilia, Trichophyton and Epidermophyton. It inhibits the growth of these organisms in dilutions of 1:10,000 (0.05 cc. of a 2 per cent solution in 10 cc. of distilled water) after short exposure to sunlight. The lethal dose is approximately 80,000 foot-candle minutes. Mercurochrome alone has

no effect on these organisms in a dilution of 1 : 500. Plates exposed to visible light without a sensitizer gave good growth after exposure of three hours.

5. A patient with onychomycosis treated with mercurochrome plus sunlight radiation for fifteen minutes was cured after two treatments. At the time of writing (October 1935) more than twenty patients have been treated with mercurochrome plus visible light radiation, with excellent results. In the next paper I shall give detailed information on the infections and their treatment.

6. Apparently, mercurochrome acts not as a direct fungicide but as a potent sensitizer to the influence of visible light.

SUPERFICIAL EPITHELIOMATOSIS

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Recently we had the opportunity to study a case of superficial epitheliomatosis in a man who showed three clinical types of lesions that have been described in the literature and also exhibited numerous papules resembling seborrheic warts. However, the histologic studies even of some of these papules showed characteristics identical with those of the erythematoid type of epithelioma which was present on the patient's chest. It is for these reasons that we report our observation.

CLINICAL TYPES OF SUPERFICIAL EPITHELIOMATOSIS

The erythematoid benign type was originally described by Graham Little.[1] The lesions usually consist of multiple discoid red patches resembling lupus erythematosus. They begin as small areas, become covered with scales and spread peripherally, forming patches of various sizes, many being the size of a dollar but some being as large as the palm. Careful examination of these lesions shows that they are surrounded by a narrow white wax threadlike border, and as the lesions spread this border is constantly pushed outward. The number of patches varies from several to a hundred or more, and patches are most often seen on the trunk; they occur seldom on the extremities. The duration varies from several to forty years (fig. 1).

In the second type the lesions are more inflammatory, often presenting crusting, and they closely resemble extramammary Paget's disease or Bowen's disease. They may or may not have the fine elevated border and may metastasize. Histologically they may show dyskeratosis and large multinuclear cells similar to those seen in Bowen's disease.

From the dermatologic clinic of Northwestern University.

The following synonyms are used to designate the condition: erythematoid benign epithelioma (Little[1]); multiple benign superficial epitheliomatosis (Wise, Fred M.: Superficial Benign Epitheliomatosis of the Skin, Arch. Dermat. & Syph. **19**:1 [Jan.] 1929); carcinoid of the skin (Arning, E.: Multiple Carcinoid der Haut, Arch. f. Dermat. u. Syph. **138**:458, 1922); pagetiform epithelioma (Darier, J.: Le cancer des dyskeratosis: Maladie de Paget et maladie de Bowen, Bull. Assoc. franç. p. l'étude du cancer **9**:169, 1920); psoriasiform carcinoma (Savatard[5]); superficial epitheliomatosis (Ormsby, Oliver S.: A Practical Treatise on Diseases of the Skin, Philadelphia, Lea & Febiger, 1934, p. 698).

1. Little, E. Graham: Erythematoid Benign Epithelioma, Brit. J. Dermat. **35**:435, 1923.

Some lesions of this type are described as having occurred in the right temporal region in our case.

Carol [2] in 1926 described a verrucous type of lesions under the title carcinosis cutis multiformis (verrucosa). He observed these lesions in a patient who also had numerous flat superficial epitheliomas. His description corresponds to the appearance of the raised granular mass seen in the right inguinal region in our case (fig. 4). Tauber and Goldman [3] reported the occurrence of a similar lesion in their case.

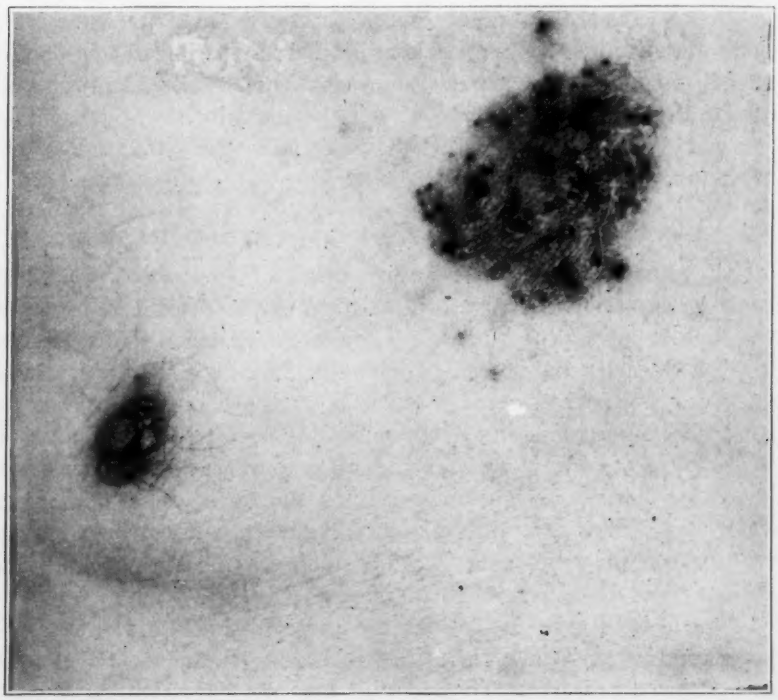

Fig. 1.—Superficial epithelioma on the chest around which were grouped numerous papules.

Besides these three clinical types of lesions we also observed numerous papules resembling seborrheic warts. These papules varied in size from 1 to 7 mm. and were from dark gray to light brown. They were scattered over the chest, abdomen and back and were particularly grouped about the epitheliomas. The histologic study of some of these papules showed characteristics identical with those of superficial epitheliomatosis (fig. 1). Other sections showed an acanthosis and edema

2. Carol, W. L. L.: Ueber Carcinosis cutis multiformis (verrucosa), Arch. f. Dermat. u. Syph. **152**:684, 1926.

3. Tauber, E. B., and Goldman, Leon: Multiple Benign Superficial Epithelioma, Brit. J. Dermat. **47**:21, 1935.

of the epidermis with areas of retiform proliferation enclosing small islands of connective tissue. While observing this case we were able to see several papules over the pubic region coalesce, become surrounded by a pearly threadlike border and form a typical superficial epithelioma.

That superficial epitheliomatosis is not as rare as it is assumed to be can be seen from the report of Dörffel,[4] who observed eighteen cases of the disorder among two hundred consecutive cases of epithelioma at the dermatologic clinic of the University of Wurzburg, Germany. The table gives a concise summary of the number, size, duration and location of these lesions.

Observations in Eighteen Cases of Epithelioma

Case	Age	Sex	Duration	Location	Size	Number
1	68	♀	Over 20 years	Near spine	Palm	One
2	67	♀	Over 10 years	Pubis and neck	Dollar	Several
3	59	♀	Not definite	Between shoulder blades	Palm	One
4	45	♂	Over 10 years	Face and neck	Small spots	Several
5	Old	♀	Many years	Loin	Palm	One
6	70	♀	Over 20 years	Spine	Palm	One
7	35	♂	Over 10 years	Over spine	50 cent piece	One
8	64	♀		Near spine	25 cent piece	Several
9	73	♀	Many years; not definite	Right side of nose	Linseed	One
10	66	♀		Spine and abdomen	Palm	Several
11	59	♀	10 years	Vertex	Dollar	Several
12	Old	♀	Many years; not definite	Forehead	25 cent piece	One
13	60	♀	10 years	Chin	Dollar	One
14	50	♀	20 years	Spine	Palm	One
15	Old	♂	Many years	Between shoulder blades	Dollar	One
16	52	♀	2 years	Breast	25 cent piece	One
17	Old	♀	Many years	Hip	50 cent piece	One
18	76	♂	20 years	Trunk, extremities and face	Dollar and larger	Twenty

REPORT OF A CASE

E. R., a man aged 60, a widower, stated that the present eruption began three years before he was seen, as a small red patch on the chest just to the right of the midline. A year later he noticed a little pimple in the inguinal fold. This gradually increased despite self-treatment with ointment and various nostrums. The patient stated that he had a painful sore on the penis but no manifestations of secondary syphilis thirty-four years before. He was treated with mercury and potassium iodide by mouth and later received one injection of arsphenamine.

Examination revealed an elderly, gray-haired man on whose skin were numerous lesions. The scalp was dry and clear. In the right temporal region there was a crusting oval lesion 2.5 by 3.5 cm. surrounded by a pearly border. At the periphery of the lesion were two bean-sized pearly nodules. The crust was thick and dark gray; when it was forcibly removed an irregular inflammatory, pustular discharging base was seen. There were no lesions on the face, but at the base of the neck were numerous dark gray papules extending down the back and involving the chest to a greater extent. Similar numerous lesions were seen on the abdomen, back and over the pubis and were particularly grouped about the

4. Dörffel, J.: Histogenese des Naevus syringocystadenomatosus papilliferus, Dermat. Wchnschr. **101**:1437, 1935.

epitheliomas. The size of these lesions varied from 1 to 7 mm. in diameter. Just to the right of the midline, extending downward from the third rib, was an oval lesion 5 by 7.5 cm. which was dull red, not infiltrated and covered with fine scales and a few excoriations. The border was not well defined. Below the ilio-inguinal ligament on the right side there was a foul-smelling papillomatous growth measuring 7 by 15 cm. and raised about 3 cm. above the surface of the skin; the epithelium covering this lesion was red and macerated. In the right upper quadrant of the abdomen there was a dull red patch with a pearly raised border measuring 1 by 2 cm. There was a similar lesion over the pubis, and another was present in the outer quadrant of the right gluteal region. The patient also complained of a painful mass in the right groin of ten days' duration. Examination revealed an indirect inguinal hernia.

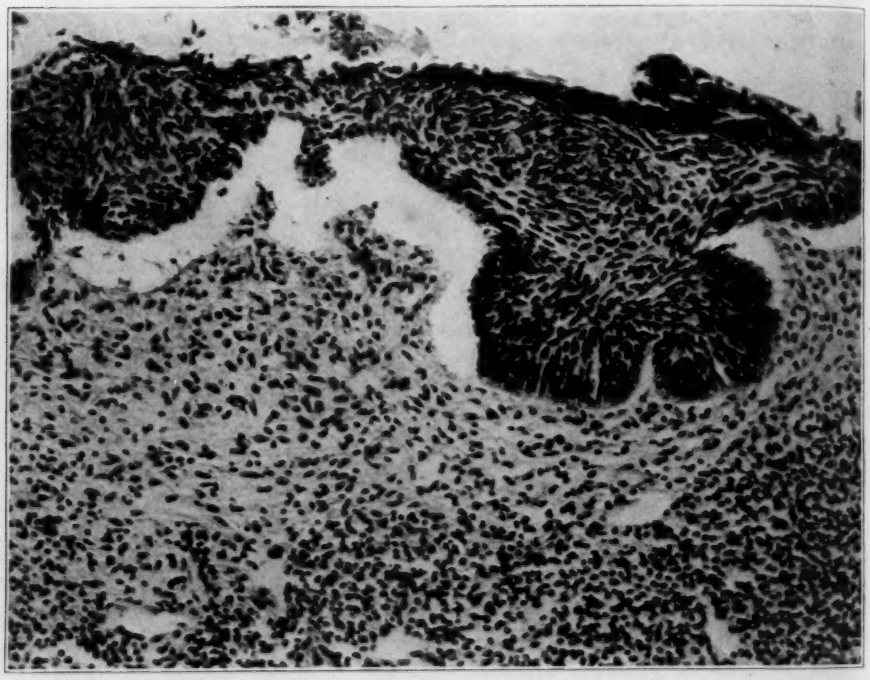

Fig. 2.—Section from the large plaque on the chest, showing nests of basal cells.

The urine contained no albumin, sugar or arsenic. The differential blood count showed 21 per cent lymphocytes, 66 per cent polymorphonuclear neutrophils, 1 per cent eosinophils, 1 per cent basophils, 4 per cent myelocytes and 7 per cent large mononuclears.

The Wassermann and the Kahn reaction of the blood were negative.

Microscopic examination of sections from the three clinically different types of lesions showed similar histologic changes with quantitative variations. This similarity of the sections was shown in the neoplastic basal cell proliferations of multicentric origin.

Figure 2 shows a section taken from the large erythematoid plaque on the chest. The horny layer was absent in some places and detached in others;

other areas showed parakeratosis. In the papillary layer of the corium there were from small to large compact masses of neoplastic hyperchromatic round or oval to elongated basal cells having a deep basophilic nucleus and scanty pale indistinct cytoplasm. An occasional mitotic figure was present. The entire corium presented a heavy infiltration with lymphocytes and plasma cells. The preformed lymph and blood channels were dilated. There was degeneration of the collagen and elastic tissue with edema.

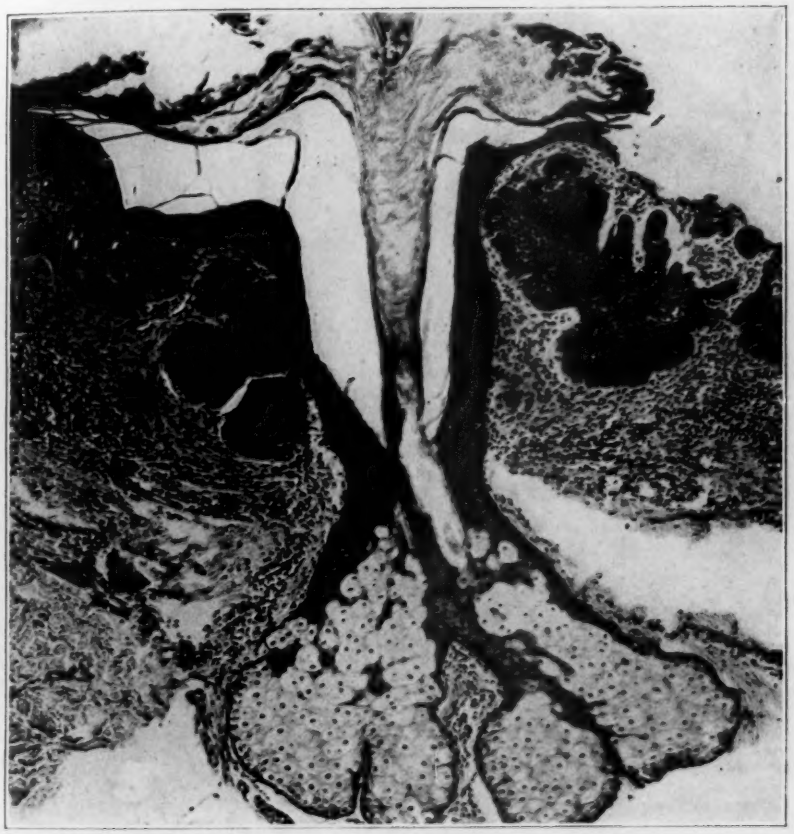

Fig. 3.—Section from one of the papules resembling a seborrheic wart. Note the nests of basal cells, such as may be seen in figure 2.

Figure 3 shows a section from a small lesion resembling a seborrheic wart. In this section were observed similar masses of neoplastic cells or nests of basal cells such as those seen in figure 1, lying deep in the corium. Some were in contiguity with the basal layer of the epidermis while others were isolated. Surrounding these masses there were a chronic inflammatory cellular infiltration, edema and degeneration of the connective tissue.

Figure 4 shows a section from the fungating lesion of the right groin. It exhibited a greater neoplastic proliferation extending through the entire width of the corium down to the subcutaneous connective tissue. The huge masses of cells showed finger-like peripheral projections, while large degenerative cystic

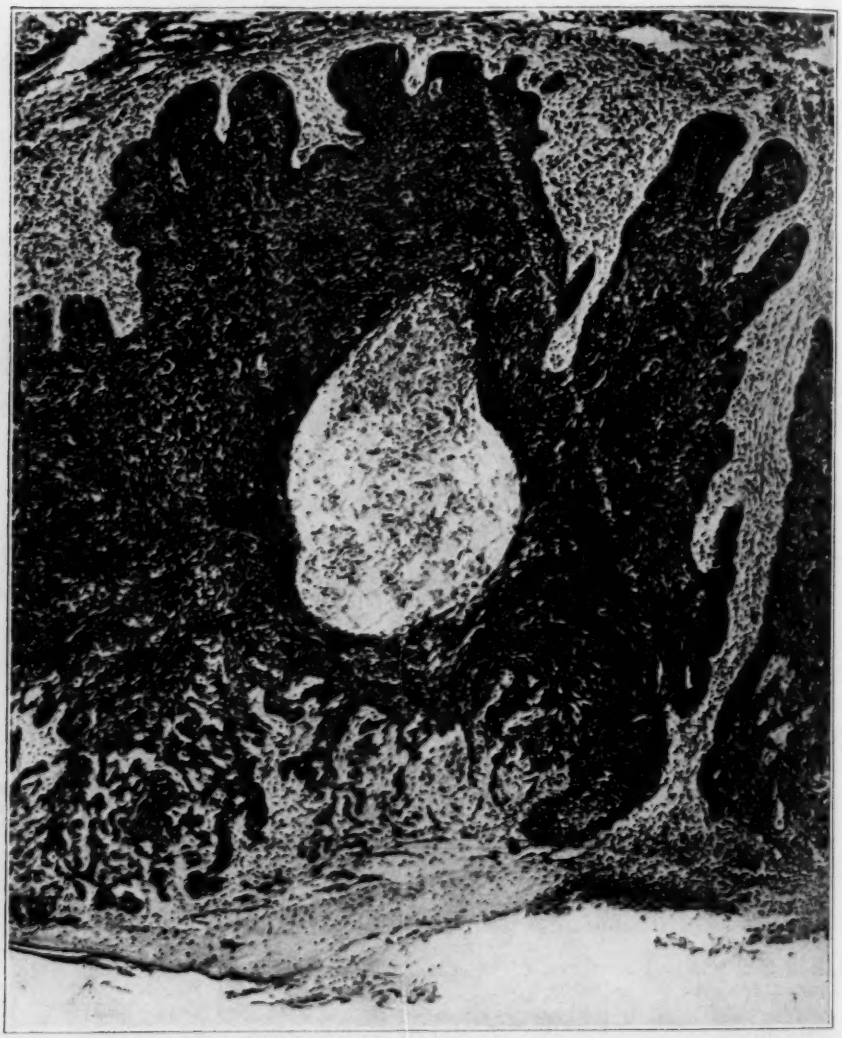

Fig. 4.—Section from the fungating lesion on the right groin, showing a greater neoplastic proliferation with cystic degeneration.

cavities were observed within the central portions. There were necrosis and ulceration of the epidermis over the tumor masses. There was the usual heavy chronic cellular infiltration about the masses in the corium.

CONCLUSION

A case of superficial epitheliomatosis is reported in which four clinical variations were observed.

Lesions resembling seborrheic warts were proved histologically to be epitheliomas.

Since superficial epitheliomatosis may assume several forms a histologic examination is necessary to establish a definite diagnosis.

Recent histologic studies by Savatard [5] tend to show that extramammary Paget's disease and Bowen's disease are also variants of superficial epitheliomatosis.

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5. Savatard, Louis: Psoriasiform Carcinoma of the Skin, Brit. J. Dermat. **47**:51, 1935.

ATROPHODERMA RETICULATUM

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MINNEAPOLIS

Atrophoderma reticulatum is a term which includes a group of cutaneous conditions characterized by the symmetrical involvement of the cheeks and the lobes of the ears. The eruption consists of atrophied follicles containing keratotic plugs. These pits at times may be erythematous. The depressed follicles are separated from each other by thin bands of skin elevated above the level of the atrophied follicles.

REVIEW OF THE LITERATURE

Unna,[1] in 1896, described the condition of a girl aged 17 whose cheeks and lobes of the ears were involved by furrows and grooves resembling "the worm-eaten bark of a tree." Seborrhea and comedones were absent. He described the histologic changes in stages—inflammation in the cutis, atrophy of perifollicular connective tissue and disappearance of lanugo hairs. He called the condition ulerythema acneiforme and considered it to be quite different from acne vulgaris.

Thieberge [2] reported a case in which comedones were present. On expression of the comedones the skin was left with a reticulated worm-eaten appearance. Besnier, in discussing this case, compared the disease with naevus comedonicus unilateralis and proposed the name *acne vermoulante*.

After publication of the aforementioned reports the subject was allowed to rest until 1918, when it was revived by MacKee and Parounagian.[3] In an extensive treatise entitled "Folliculitis Ulerythematosa Reticulata," they described two cases. A third case, that of Whitehouse,[4] was also included in their article. The patients whose conditions were described were young; Whitehouse's patient was a young woman; MacKee and Parounagian's patients were a girl aged 16, in whom the onset occurred at 8 years, and a boy aged 9, in whom the onset was at

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From the Department of Dermatology, University of Minnesota, H. E. Michelson, M.D., Director.

1. Unna, P. G.: Ulerythema Acneiforme; Histopathology of Diseases of the Skin, New York, Macmillan Co., 1896, p. 1084.

2. Thieberge, G.: Acné vermoullante, in Besnier, E.; Brocq, L., and Jacquet, L.: La pratique dermatologique, Paris, Masson & Cie, 1900, vol. 1, p. 207.

3. MacKee, G. M., and Parounagian, M. B.: Folliculitis Ulerythematosa Reticulata, J. Cutan. Dis. **36**:339, 1918.

4. Whitehouse, H. H.: Case for Diagnosis, J. Cutan. Dis. **31**:489, 1913.

4 years. The chief characteristics clinically were as follows: symmetrical involvement of the cheeks by small pits with interspaced ridges, onset in childhood with slow evolution, erythema which possibly disappeared in adult life and absence of papules, pustules, scales and seborrhea. The histologic picture showed acanthotic hyperkeratotic tortuous hair follicles, inflammation, degeneration and retraction of connective tissue and underdevelopment of sebaceous glands. The changes in the epidermis were unimportant.

Pernet,[5] under the title "Atrophodermia Reticulata Symmetrica Faciei," described the disorder exhibited by a 12 year old girl. The onset of the condition followed measles at the age of 4 years. He noted that the skin of the cheeks had a honeycomb appearance and presented a superficial atrophy. There was a fine network of meshes which raised a delicate tracery enclosing slightly depressed atrophic areas. Here and there telangiectasia was present. A biopsy was not made.

Little[6] showed a 15 year old boy in whom the condition had been present for five years. The cheeks were involved by atrophic follicles which contained hard horny plugs. Although a few comedones were present, there was neither pustulation nor erythema. Little advocated the name folliculitis atrophicans reticulata. H. W. Barber, who saw the patient, identified the condition as folliculitis ulerythematosa reticulata of MacKee and Parounagian. A biopsy was not made.

Darier,[7] in an article entitled "*Atrophodermie vermiculée des joues avec keratoses folliculaires,*" described the condition of a 9 year old boy who exhibited follicular atrophy, dilatation and plugging on the cheeks. He stated that the appearance simulated that of a piece of worm-eaten wood. Darier expressed the belief that the condition began at puberty and was the same as that described by Thieberge as *acne vermoulante,* with which name he was not in accord. He did not consider the disorder acne but preferred to group it with the atrophies.

Pautrier[8] presented a youth aged 19, the onset of whose condition was at 14 years of age. There was symmetrical involvement of the cheeks by atrophic follicular lesions, with fine ridges separating the depressions. There was no infiltration or induration. Erythema surrounded the involved areas. Seborrhea, papules of acne and pustules

5. Pernet, G.: Atrophodermia reticulata symmetrica faciei, M. Press & Circ. **101**:487, 1916.

6. Little, E. G. G.: Folliculitis Atrophicans Reticulata, Brit. J. Dermat. **31**: 201, 1919.

7. Darier, J.: Atrophodermie vermiculée des joues avec kératoses folliculaires, Bull. Soc. franç. de dermat. et syph. **10**:345, 1920.

8. Pautrier, L. M.: Atrophodermie vermiculée des joues sans kératose folliculaire apparente et s'accompagnant d'érythème, Bull. Soc. franç. de dermat. et syph. (Réunion dermat.) **29**:21, 1922.

were absent. No follicular plugs or comedones were seen. The point Pautrier made in comparing his case with Darier's was that in his case there was only follicular atrophy but no hyperkeratoses. The patient did not consent to a biopsy, and Pautrier concluded that the condition exhibited by his patient was a variant of Darier's *atrophodermie vermiculée.*

Corson and Knowles,[9] under the name of folliculitis ulerythematosa reticulata, described the condition of a 15 year old boy in whom the lesions had been present for eight years. Crusting and suppuration were observed. They agreed that the condition was similar to that in the first case described by Unna.

Mendes da Costa [10] presented two cases, in a mother and daughter. The cheeks were involved in both cases. The onset in the mother was at 6 years and in the daughter at 3 years of age. Da Costa noted the similarity of the disorder exhibited by his patients to those described by Darier, MacKee and Parounagian and Pautrier. In addition, the daughter had a definite deficiency of hair from the time of birth. Both the hereditary factor and the trophic disturbance of the hair follicles suggested the nevoid nature of the condition.

Barber [11] presented a brother and sister with folliculitis ulerythematosa reticulata associated with lichen spinulosus, epidermal cysts and folliculitis decalvans. The cheeks and temples were involved. Epidermal cysts similar to those exhibited by MacKee and Parounagian's patients were noted. In both patients the condition had been present since infancy. These cases again demonstrated the nevoid relationship of this condition.

Vigne's [12] patient, a woman aged 23, with *atrophodermie vermiculée des joues,* dated the onset at 18 years of age. The disorder simulated that in Pautrier's case in that there was absence of yellowish brown or grayish follicular plugs and of dilated follicular ostia. Vigne noted a worm-eaten appearance and pale red-yellow pits between which there was normal healthy skin. No acne or erythema was present, and no pseudocomedones could be expressed. Vigne was unable to classify the disorder exhibited by his patient with the macular atrophies, but he

9. Corson, E. F., and Knowles, F. C.: Folliculitis Ulerythematosa Reticulata, Arch. Dermat. & Syph. **10**:293 (Sept.) 1924.

10. Mendes da Costa: Atrophoderma Reticulata (Two Cases), Nederl. tijdschr. v. geneesk (pt. 2) **70**:1587, 1926.

11. Barber, H. W.: Folliculitis Ulerythematosa Reticulata Combined with Lichen Spinulosus, Epidermal Cysts and Folliculitis Decalvans, Brit. J. Dermat. **40**:24, 1928.

12. Vigne, Paul: Atrophodermie vermiculée des joues, Bull. Soc. franç. de dermat. et syph. (Réunion dermat.) **36**:852, 1929.

thought that the term *atrophodermie vermiculée* referred to a combination of atrophy and follicular keratosis.

Wertheimer [13] presented a girl, aged 15, whose disorder he called folliculitis ulerythematosa reticulata. The condition began as a slight roughened redness on both cheeks when the patient was 10 years of age. The condition of this patient was comparable to that of MacKee and Parounagian's patients except that no milia were seen clinically. No biopsy was made.

Zoon's [14] case of atrophodermia vermicularis of the cheeks, in a 10 year old boy, corresponded with Darier's case, histologic examination showing subepidermal elastoma, pseudocomedones and horny cysts. Lanugo hairs and sebaceous glands were absent.

Bruck's [15] cases of atrophoderma vermiculatum occurred in two brothers; one, aged 19, in whom the onset was at 8 years of age, and one, aged 22, in whom the onset occurred before puberty. Clinically, these patients showed symmetrical involvement of the cheeks by follicular atrophy. Erythema and epidermal cysts were absent. Lanugo hairs were present, but coarse beard hairs were absent. The skin had the fine smoothness of girls' skin. Microscopically the elastic tissue was slightly changed. The lanugo hairs were retained as well as the hair anlage. Bruck stated that the appearance of a worm-eaten skin resulted from a sclerosis of the cutis. He explained that the varied clinical pictures described by different authors were due principally to the fact that the same condition was studied in different stages of its development. He regarded the pathogenesis as being dependent on two factors: the absence of sebaceous glands and the degenerative changes in the hair, hair follicle and hair follicle ostium and stated that the disorder could also be explained on the basis of primary changes of the supportive tissue of the skin, while the disappearance of sebaceous glands was secondary as in other follicular keratoses.

Brünauer [16] presented a case of *atrophodermie vermiculée* in a 60 year old woman. The cheeks were involved symmetrically by a network which had a worm-eaten appearance. This had been present for only a few years before the patient presented herself for treatment. There

13. Wertheimer, H. G.: Folliculitis Ulerythematosa Reticulata, Arch. Dermat. & Syph. **22**:358 (Aug.) 1930.

14. Zoon, J. J.: Atrophodermia vermiculatis, Dermat. Wchnschr. **90**:710, 1930.

15. Bruck, W.: Atrophoderma vermiculatum bei zwei Brüdern, Arch. f. Dermat. u. Syph. **162**:108, 1930.

16. Brünauer, S.: Atrophodermie vermiculée des joues, Zentralbl. f. Haut. u. Geschlechtskr. **34**:23, 1930.

were no comedones, dilated follicles, acne or seborrhea. Brünauer compared his case with Pautrier's case of *atrophodermie vermiculés des joues sans keratose.*

Oppenheim [17] reported a case and attempted to classify the various types of atrophoderma vermiculata into four groups: type 1, with folliculitis; type 2, with comedo formation; type 3, without comedo formation, and type 4, with inflammatory border. His patient, a 15 year old girl, dated the onset at 11 years of age. Oppenheim classified her condition as type 3. In conclusion Oppenheim asserted that the material at hand was too small to allow one to determine definitely the pathogenesis and clinical relationship of atrophoderma vermicularis. However, he believed the disorder to be an atrophy of nevoid type.

Burgess' [18] patient was a 14 year old girl in whom the condition developed at 9 years of age. Burgess entitled his article "Folliculitis Ulerythematosa Reticulata." The forehead, cheeks and bridge of the nose were involved by innumerable pitlike areas of atrophy separated from each other by narrow ridges. Telangiectases were present. Pustulation was absent. In reviewing the literature he included the reports of Whitfield [19] and of White [20] but considered the eruptions described by these authors different from that in his patient in that they showed true comedo formations and were asymmetrical. He differentiated this condition from ulerythema ophryogenes, which affects the hairs of the eyebrows, scalp and pubis by follicular papules, plugs, scaliness and pustulation. His conclusions were that folliculitis ulerythematosa reticulata was a definite entity, a follicular dystrophy probably of congenital origin, and that it was related to other chronic follicular disorders but was not related to comedo formation.

REPORT OF A CASE

A woman [21] aged 34 had been married and had no children. She had noticed the condition on her face for many years but did not recall the precise age at which it appeared. She had been treated previously for acne with lotions but had received no roentgen radiation. The lotions had brought about no improvement.

The skin over the cheeks, especially in the preauricular areas, was made up of a reticular network, the strands of which were apparently normal tissue. The areas in between were depressed, and here and there contained comedo-like plugs.

17. Oppenheim, M.: Atrophodermias, in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1931, vol. 8, pt. 2, p. 649.

18. Burgess, N.: Folliculitis Ulerythematosa Reticulata, Brit. J. Dermat. **44**: 357, 1932.

19. Whitfield, A.: Cutaneous Atrophy with Comedo, Proc. Roy. Soc. Med. **7**:87, 1914.

20. White, C. J.: Naevus Follicularis Keratosus, J. Cutan. Dis. **32**:187, 1914.

21. Dr. Henry E. Michelson, who treated the patient, permitted me to make this report.

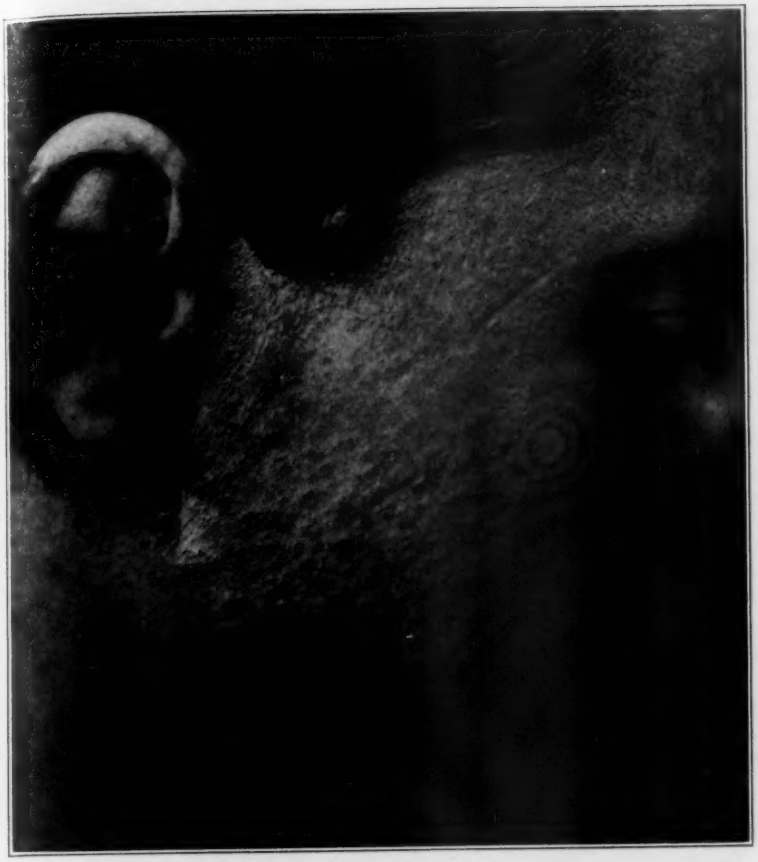

Fig. 1.—Clinical picture of atrophoderma reticulatum.

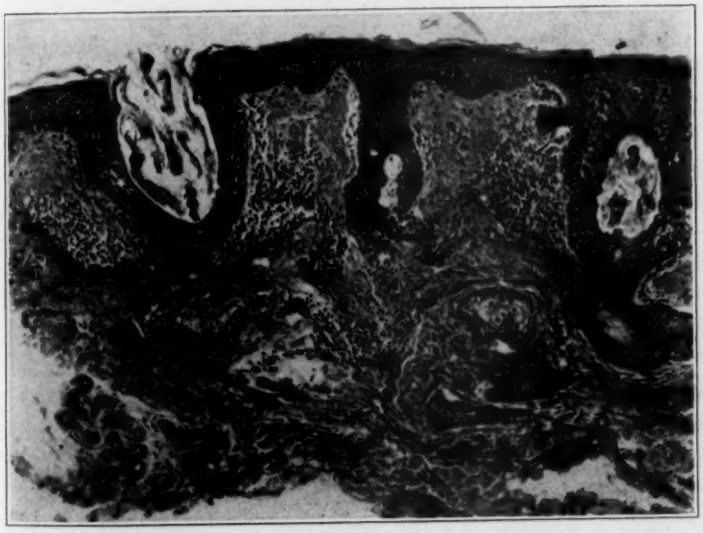

Fig. 2.—Low magnification of a section showing dilated follicles with plugging, atrophy of the cutis and decrease of sebaceous glands.

When the skin was cleansed with purified petroleum benzin U. S. P. the depressed areas were seen to be slightly scaly. There were no papules or pustules, and the comedones that were present could be expressed with difficulty. The eruption was confined to the cheeks. There was no acne on the forehead, back or chest. The scalp showed a low degree of seborrhea. The Wassermann reaction was negative.

Histologic Examination.—Material for a biopsy was removed and fixed in 70 per cent alcohol.

Serial sections stained with hematoxylin and eosin were studied. Under low magnification the sections showed that the upper portion of the follicles was dilated and filled with a cornified plug. The lower portion of the follicle, together with the sebaceous glands and hair bulb, either had entirely disappeared or was markedly diminished in size. Lanugo hairs were absent. Otherwise the epidermis was normal. In the cutis papillaries there was a moderate cellular infiltrate. The cutis reticularis appeared normal.

Under high magnification the cutis papillaris was seen to be edematous and fragmented. It stained lightly. These changes were most marked in the vicinity of the involved follicles. The cellular infiltrate, which was heaviest in the cutis papillaris, consisted of small round cells. The cutis reticularis showed normal connective tissue bundles, but no cysts were seen.

The Van Gieson stain showed definite collagenous degeneration in the cutis papillaris. This degenerated tissue assumed the yellow stain and not the red of normal-staining connective tissue.

Weigert's elastic tissue stain showed that the perifollicular elastic tissue had disappeared. The elastic tissue in the adjacent cutis reticularis was fragmented and clumped. Elastic tissue also was absent in the areas involved by the round cell infiltrate.

COMMENT

Reports of two members of the same family being affected were published by da Costa (mother and daughter), Barber (brother and sister) and Bruck (two brothers). Dystrophy of the hair of the scalp was present in Barber's patients and in one of da Costa's patients. In Bruck's article it is stated that in the older of the two brothers a beard did not develop. From these reports it is evident that the condition suggests a dystrophy of the hair follicles. The fact that the condition appears for the most part in early childhood and adolescence influences one to consider it as nevoid. However, if one were to classify atrophoderma reticulata as a nevus, it would fall in the group of heterologous hamartoma since the proliferative tissue does not resemble mature follicular structures. In fact, in the condition under consideration there is a diminution of normal follicular appendages. The structures seen are less differentiated than they are in naevus unilateralis comedonicus.[22] Clinically, one can assume that the condition represents an abnormality of the hair follicles. This characteristic may be considered familial or hereditary.

22. Sweitzer, S. E., and Winer, J. H.: Naevus Comedonicus Unilateralis, Arch. Dermat. & Syph. **26**:694 (Oct.) 1932.

Darier [23] in his text classified *atrophodermie vermiculée des joues* in the chapter of regional atrophies and considered it to be the same as *acne vermoulante and* folliculitis ulerythematosa reticulata. However, he concluded that the disorder was probably nevoid in origin. Gans [24] called the condition atrophoderma erythematodes reticularis and classified it in the group of cutaneous atrophies. Sutton and Sutton [25] included it in the chapter on new growths, in which they also included naevus follicularis keratosus. They considered folliculitis ulerythematosa reticulata and naevus follicularis keratosus similar histologically but different clinically. The nevoid nature of this condition is suggested by its onset during adolescence, by the fact that it affects more than one member of a family, by trophic changes in the hair follicles and by faulty growth of hair. Its classification as an atrophy is based clinically on the sclerotic pitting and histologically on the changes in the collagen and elastic tissue. Therefore, one must conclude that the disorder is a nevus the outstanding characteristics of which place it in close relationship to the atrophies.

DIAGNOSIS

Atrophoderma reticulata is to be differentiated from naevus unilateralis comedonicus [22] as both conditions occur in immature persons and have the follicle as the center of the clinical picture. In naevus unilateralis comedonicus there is a true comedone, which is easily expressed, and the lesions are asymmetrical and at times may be involved by suppuration. In atrophoderma reticulatum there are pseudocomedones, much smaller than true comedones, which are expressed only with great difficulty, being firmly adherent to the follicular walls, and which involve the face symmetrically. Histologically, there is the difference that connective tissue degeneration and elastic tissue fragmentation are observed in atrophoderma reticulatum but not in naevus unilateralis comedonicus.

Not infrequently this condition is mistaken for acne vulgaris, but the course and clinical features soon manifest the error in diagnosis.

The clinical features of erythema, atrophy, follicular hyperkeratosis and reticulation, together with the microscopic picture of perivascular round cell infiltrate, degeneration of connective tissue, fragmentation of the elastic tissue and atrophy of the follicular epidermis, are all suggestive of inflammatory processes. Corresponding changes can be

23. Darier, J.: Précis de dermatologie, ed. 3, Paris, Masson & Cie, 1923, p. 427.

24. Gans, Oscar: Histologie der Hautkrankheiten, Berlin, Julius Springer, 1925, vol. 1, p. 38.

25. Sutton, R. L., and Sutton, R. L., Jr.: Diseases of the Skin, ed. 9, St. Louis, C. V. Mosby Company, 1935, p. 729.

seen in the tense atrophy of scleroderma or even in that seen in lupus erythematosus. But clinically the reticulation and course, and histologically the follicular dilatation and cyst formation make possible a differentiation from scleroderma and lupus erythematosus.

Therapy seems to be of little avail. Darier [23] suggested heliotherapy. W. J. Sibley in discussing Barber's [11] case stated that he had used roentgen rays beneficially in one case. The patient whose case is reported here was improved by roentgen therapy. MacKee [26] saw the older of the two patients whose cases he reported six years earlier and whom he had treated with roentgen rays. The patient had telangiectases and two basal cell carcinomas. Although the follicular plugs, milia and flushing of the cheeks had for the most part disappeared and the skin was softer, the reticulation and atrophy remained. Others have noted similar changes without any therapy; as the patient became more mature, the cutaneous manifestations became less pronounced. However, in all cases the reticulation and atrophy persisted.

SUMMARY

Atrophoderma reticulatum is an entity which is characterized by a combination of nevoid and degenerative or atrophic factors.

Material at hand allows one to conclude that the disorder is a nevus in which atrophy is the terminal stage.

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26. MacKee, G. M.: Folliculitis Ulerythematosa Reticulata, Arch. Dermat. & Syph. **22**:365 (Aug.) 1930.

BILATERAL HERPES ZOSTER COMPLICATING CUTANEOUS, OSSEOUS AND PULMONARY TUBERCULOSIS

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LOS ANGELES

Though unilateral herpes zoster is a common disorder, examples of it constituting from 1 to 2 per cent of all cases observed in the average dermatologic practice,[1] the bilateral form is rarely seen. A review of the literature revealed reports of only forty-six instances of bilateral zoster. Fox[2] mentioned having observed two additional cases. Several patients have been presented before various dermatologic societies in this country with this diagnosis, but in all instances, with the exception of the one presented by Weiss,[3] the majority of members in discussing these presentations classified the lesions as herpes simplex.

It was surprising to note that in all the articles reviewed in preparing this report the authors merely briefly presented their cases without discussing the phenomenon at any length. We had the opportunity to observe a patient in whom bilateral zoster developed while he was in the hospital for cutaneous, osseous and pulmonary tuberculosis. This case is presented in conjunction with a review of the available literature.

REPORT OF A CASE

J. G. J., an unmarried Filipino aged 21, had come to Los Angeles from the Philippine Islands three years before his admission to the hospital and had enjoyed good health up to May 1935.

At that time he noticed a swelling in the right sternoclavicular area; this enlarged rapidly until it had attained the size of an orange. The patient stated that there was an associated erythema of the surrounding skin and that a slight amount of pain was present when he moved his arms. He visited a physician,

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From the Department of Dermatology and Syphilology, service of Dr. H. P. Jacobson, Los Angeles County Hospital.

1. Corson, E. F., and Knowles, F. C.: Unusual Cases of Herpes Zoster, Arch. Dermat. & Syph. **5**:619 (May) 1922.

2. Fox, H.: Bilateral Herpes Zoster, J. Cutan. Dis. **33**:492 (June) 1915.

3. Weiss, R. S.: A Case for Diagnosis: Herpes Zoster Bilateralis or Herpes Zoster with Aberrant Vesicles, Arch. Dermat. & Syph. **11**:710 (May) 1925.

who removed the mass surgically, but the wound failed to heal satisfactorily. The patient was then referred to the Los Angeles County Hospital for further care.

He was first seen on Aug. 29, 1935. A general physical examination gave normal results except for the lesion on the thoracic wall. A roughly circular ulcer, 2½ inches (6 cm.) in diameter, was present over the manubrium of the sternum. The edges of the ulcer sloped inward, and the major portion was filled with exuberant granulation tissue that bled profusely on the slightest trauma. A little purulent material was present on the surface of the granulation tissue. The surrounding skin was mildly erythematous.

There was no history of cough, night sweats, afternoon fever, expectoration of sputum, hemoptysis or pleurisy, and the patient had had no contact with tuberculosis. He had lost about 20 pounds (9 Kg.) in the previous three months. He was afebrile on entry.

Extensive laboratory studies were found necessary to establish the diagnosis. Routine urinalyses gave negative results. Examination of the blood showed 80 per cent hemoglobin (Sahli), 4,700,000 red cells and 8,400 white cells per cubic millimeter. There were 42 per cent lymphocytes, the remainder of the white cells being polymorphonuclear leukocytes. The Kolmer modification of the Wassermann and the Kahn test of the blood gave negative results on two occasions. Two cultures of the blood also gave negative results.

A lumbar puncture was performed, and the pressure was found to be 150 mm. of water. The Queckenstedt test gave normal results on both sides. The Wassermann and the Kahn reaction of the spinal fluid were negative. The globulin content was normal, and no cells were seen in the fluid. The colloidal benzoin curve was also normal. Smears and cultures failed to reveal the presence of any organisms in the spinal fluid.

An intradermal test with coccidioidin gave negative results. Tuberculin injected intradermally produced a strongly positive reaction in a dilution of 1 : 10,000.

Five biopsies were made at different times during the patient's stay in the hospital. All specimens were taken from the edge of the ulcerative lesion situated over the manubrium. The tissues were fixed in a dilute solution of formaldehyde U. S. P. (1 : 10) and stained with hematoxylin and eosin. Although the pictures differed slightly in the different sections, the following report represents a composite picture of the observations in all five:

The surrounding skin showed only a slight acanthosis of the epidermis with a mild round cell infiltration of the corium. The ulcer was seen to be filled with granulation tissue containing occasional areas of fibrosis. Numerous new blood vessels were noted, but a certain amount of obliterative endarteritis was also present. The tissue was densely infiltrated with inflammatory cells. The round cells—lymphocytes and plasma cells—predominated, but a number of polymorphonuclear leukocytes and histiocytes were also present. A few large, multinuclear giant cells were seen in which the nuclei were gathered around the periphery of the cells. No true tubercles were noted. Staining for acid-fast organisms failed to reveal any tubercle bacilli. The tissue was also stained by the method of Krajian,[4] but Spirochaeta pallida could not be demonstrated.

Smears and cultures made from material from the lesion and from excised portions of tissue gave uniformly negative results. White mice inoculated with tissue from the ulcer were found to be normal at autopsy. Two guinea-pigs

4. Krajian, A. A.: A Rapid Method of Staining Spirochaeta Pallida in Single Sections of Tissue, Arch. Dermat. & Syph. **32**:764 (Nov.) 1935.

were also inoculated with this tissue, and although the first was found to be normal at necropsy, the second showed changes in the liver and spleen characteristic of tuberculosis. Tubercle bacilli were demonstrated in stained sections of the liver.

A roentgenogram of the sternum made on entry was interpreted by Dr. Ray A. Carter as showing a purely destructive lesion on the surface of the manubrium of the sternum. This has been slowly progressive up to the time of writing, although a slight periostitis has developed since. A roentgenogram of the chest

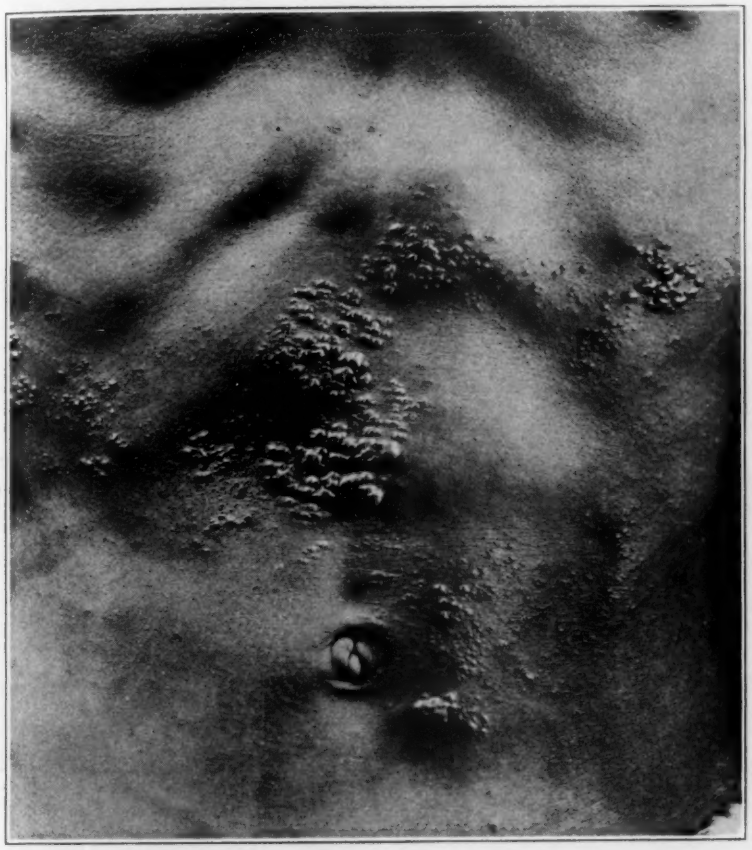

Fig. 1.—Eruption of zoster on the anterior aspect of the body.

revealed an increase in density in both hilar areas, with accentuation of the peribronchial markings, especially toward the lower part of each pulmonary field. Some irregular widening of the shadow of the superior mediastinum to the right was also noted. On October 2, a definite haziness of the right mediastinal border was present.

In the meantime the temperature became elevated in the afternoon, slowly ascending until by October 25 it reached 101 F. daily. At this time the patient complained of some heaviness of the right side of the chest, and physical examination revealed the typical signs of a pleural effusion. A diagnostic thoracentesis

was performed, and 75 cc. of amber-colored fluid was removed. Its specific gravity was 1.020, and only a few lymphocytes could be seen on microscopic examination. Cultures gave negative results, and a guinea-pig inoculated with the fluid was found to be normal on postmortem examination six weeks after inoculation. Roentgenologic examination revealed that the effusion reached the level of the third rib and then slowly subsided. The last roentgenogram was made on December 20, and was reported to show a slight diffuse thickening of detail in the right hilar region and medial basal area, with a narrow pleural shadow at the right axillary margin and right costophrenic sulcus. The pleural effusion was greatly decreased in amount. Dr. Carter expressed the belief that this was suggestive of tuberculosis.

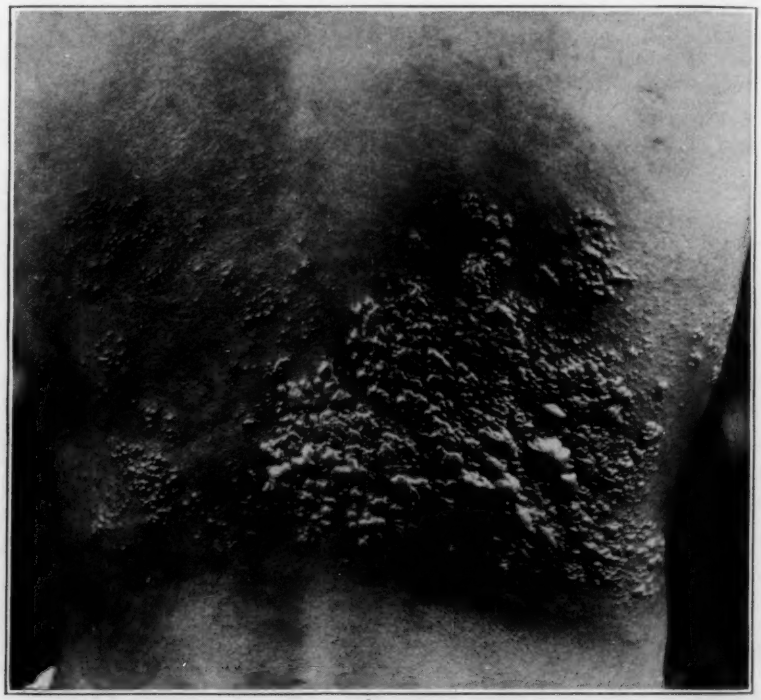

Fig. 2.—Eruption of zoster on the posterior aspect of the body.

Treatment was mainly symptomatic, although the patient had been receiving antimony and potassium tartrate intravenously. On December 4, about twenty-four hours after an injection of the aforementioned drug, the patient noted a "burning" sensation on his right side but thought nothing of it. The next morning a typical eruption of herpes zoster was present over the area supplied by the seventh, eighth, ninth and tenth thoracic nerves. Erythema was marked, and a number of discrete and confluent vesicles extended around the trunk to a point a little beyond the midline both anteriorly and posteriorly. It was particularly profuse on the posterior aspect of the body. The skin of the involved area was markedly hyperesthetic. No other vesicles were noted on the body.

The patient had received a total of 5.6 Gm. (84 grains) of antimony and potassium tartrate over a period of thirty-one days. Despite the lesions another injection of 0.1 Gm. (1½ grains) was given on December 5, and on the following day a similar eruption appeared on the left side of the body, involving the same nerves as on the right side (figs. 1 and 2). This eruption was more sparse than the one on the right and consisted of groups of deep-seated vesicles on an erythematous base. Hyperesthesia was also marked on this side. The lesions met with those on the right both anteriorly and posteriorly. A few deep-seated vesicles were scattered on the trunk.

The "burning" sensation persisted for five days but was not excessively severe. A mild febrile reaction accompanied the process. A roentgenogram of the dorsal vertebrae revealed a destructive process attacking the body of the eleventh dorsal vertebra, irregularity of the cartilage being present between it and the tenth vertebra. The body of the eleventh vertebra had been compressed to approximately two thirds of its normal diameter. An area of cystic rarefaction surrounded by sclerosis was present. The adjacent vertebrae appeared normal on roentgenologic examination.

Patch and scratch tests with antimony and potassium tartrate gave negative results, and further injections of this preparation did not aggravate the existing lesions or cause new ones to appear.

The lesions have gradually disappeared, although scarring and hyperesthesia have persisted in the affected areas up to the time this report was made.

COMMENT

The review of the literature here given is a composite of the reported cases, plus the one which we observed.[5] We were unable to obtain some of the original articles; hence the review is incomplete in a number of particulars.

Montault,[6] in 1831, presented what was probably the first case of bilateral herpes zoster to be reported. Other early reports of this unusual condition included that of Bryant,[7] in 1865, of Hutchinson,[8] in 1866, and of Moers,[9] in 1867; Moers reported two cases.

This study gives no reason to doubt the theory that herpes zoster is caused by a virus. Among the possible predisposing factors may be listed "rheumatism and heart disease,"[10] syphilis, malaria or ingestion

5. Additional references are given in the authors' reprints.

6. Montault: Observation of Zona Forming a Complete Circle Around the Trunk, J. univ. et hebd. de méd. et chir. prat. **4**:239, 1831.

7. Bryant, T.: Herpes Zoster Affecting Both Sides of the Body, M. Times & Gaz. **1**:335, 1865.

8. Hutchinson, J.: A Clinical Lecture on Unilateral Herpes Zoster, Clin. Lect. & Rep. London Hosp. **3**:68, 1866.

9. Moers: Herpes zoster bilateralis der unteren Extremitäten mit Entwickelung von Pemphigus aus demselben, Deutsches Arch. f. klin. Med. **3**:163, 1867; **4**:249, 1868.

10. Mobley, C. A.: A Case of Asymmetrical Bilateral Herpes Zoster, J. A. M. A. **59**:879 (Sept. 14) 1912.

of quinine,[11] neurosyphilis,[12] acute arsenic poisoning,[13] diphtheria or administration of diphtheria antitoxin,[2] sunburn [14] and tuberculosis of the spine. In the majority of cases no such factors could be found. The old theory that bilateral zoster is usually associated with syphilis or with the administration of arsenic is not supported by the series reviewed. The autopsy observations reported by Krementchousky, Bauer, and Tharaud [15] suggest a virus infection. That necropsy showed pulmonary edema and meningeal congestion. Terminal delirium had developed. A relationship between bilateral herpes zoster and varicella could not be established in any case.

Bilateral zona occurs more frequently in men than in women. The age of the patients ranged from 5 weeks [17] to 73 years.[13] However, the majority (69.2 per cent) of the patients were aged between 20 and 60.

The attack is often ushered in with malaise and fever, the temperature sometimes reaching 104 F. (40 C.). The eruption in the patient presented by Remon and Blamoutier [18] was preceded by symptoms of meningeal irritation. As a rule, local pain or burning is present for from twelve to twenty-four hours before the vesicles appear. The first eruption usually occurs on the right side, but it may appear on the left, or the onset may be simultaneous on the two sides.[19] The second zoster is usually noted from twenty-four to thirty-six hours after the first, although it may not appear for as long as eight or nine days.[11] The eruption is roughly symmetrical about as often as it is grossly asymmetrical. It rarely meets in the midline.

Schoenfeld [16] stated that bilateral zona usually occurs on the face, buttocks or genitalia. He expressed the opinion that the condition is due to involvement of the meninges and that the process most often occurs at the extremities of the spinal cord. Our studies do not substantiate this observation. The dorsal nerves are most often involved, involvement of those nerves being present in 50 per cent of the cases reported,

11. Elliot, G. T.: Relapsing Double Zona, J. Cutan. & Genito-Urin. Dis. **6**: 321 (Sept.) 1888.

12. MacKee, G. M., and Fordyce, J. A.: Bilateral Herpes Zoster, J. Cutan. Dis. **33**:319 (April) 1915.

13. Jacob, F. M.: Bilateral Herpes Zoster Following Acute Arsenic Poisoning, Arch. Dermat. & Syph. **24**:280 (Aug.) 1931.

14. Krosl, H.: A Case of Bilateral and Symmetrical Zoster of the Upper Extremities and Loins, Dermat. Wchnschr. **77**:1267 (Oct. 27) 1923.

15. Krementchousky, Bauer and Tharaud: Association of Erythema Nodosum and Bilateral Herpes, Bull. Soc. franç. de dermat. et syph. **42**:801 (May) 1935.

16. Schoenfeld, W., in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1931, vol. 7, pt. 1, p. 13.

17. Fox, C.: Brit. J. Dermat. **10**:252, 1898.

18. Renon, L., and Blamoutier, P.: Herpes Zoster in Anus Region, Bull. et mém. Soc. méd. d. hôp. de Paris **45**:65 (Jan. 28) 1921.

19. Krementchousky, Bauer and Tharaud.[15]

while involvement of the cervical nerves (including the brachial plexus) is next in frequency, the percentage being 28.5 per cent. The lumbar nerves are affected in 25 per cent of the cases, while the percentage of involvement of the cranial and sacral nerves is only 17.8 per cent for each group of nerves. There was no significant difference in the occurrence of zoster on the right and on the left side in any given region of the body.

Mobley [10] reported an unusual instance of bilateral herpes zoster in which the first eruption became purulent while the second was hemorrhagic. Ulceration may occur, as in the patient presented by Hillenberg.[19a] The dermatosis on the left side in Melnotte's case [20] was admittedly atypical, and possibly that case does not represent an example of true bilateral zoster.

It was interesting to note that the severity of the eruption and of the subjective symptoms was no greater in patients with bilateral than in those with unilateral zoster. In the two children whose cases are reported by Comby [20a] pain was absent. Recovery from bilateral zoster is about as rapid as that from unilateral zona. Persistent scarring has been noted in a number of instances; it was present in our case.

Recurrences were abnormally frequent, two cases [21] of recurrences being noted in this small series. An eruption of scattered vesicles on the trunk and extremities was also of comparatively common occurrence; [22] it was present in our patient.

As a rule mild leukocytosis is noted in the blood, the increase in the number of leukocytes being most marked in the percentage of polymorphonuclear leukocytes. Pleocytosis was noted in the spinal fluid by Milian and Lafourcade [23] and by Touraine and Baumgartner,[24] while the fluid was found to be normal by Krementchousky, Bauer and Tharaud [15] and by Melnotte.[20] The Wassermann reaction of the spinal fluid was reported to be normal in all the cases in which the fluid was examined.

19a. Hillenberg, E.: Bilateral Herpes Zoster, Klin. Wchnschr. **1**:737 (April 8) 1922.

20. Melnotte, M. P.: Bilateral Herpes Zoster, Bull. Soc. franç. de dermat. et syph. **39**:1527 (Dec.) 1932.

20a. Comby, J.: Bilateral Crossed Herpes Zoster, Lancet **1**:749 (April 12) 1924.

21. Elliot.[11] Krementchousky, Bauer and Tharaud.[15]

22. Bulkley, L. D.: Double Herpes Zoster, Arch. Dermat. **4**:50, 1878. Melnotte.[20]

23. Milian, G., and Lafourcade: Double Zona, Bull. Soc. franç. de dermat. et syph. **42**:741 (May) 1935.

24. Touraine, M. A., and Baumgartner, P.: Double Ophthalmic Zona, Bull. Soc. franç. de dermat. et syph. **41**:736 (May) 1934.

Our patient is the only one in the series in whom roentgenologic examination of the vertebrae revealed gross abnormalities. Rosenthal [25] reported a case in which unilateral herpes zoster preceded gross evidence of tuberculosis of the vertebral column. It is suggested that roentgen examination of the involved portion of the spine be made in cases of bilateral zoster.

While herpes zoster usually presents a characteristic picture, confusion of the bilateral type with herpes simplex is apt to occur. This is especially true in cases of extensive eruptions of the latter. Other conditions that may cause difficulty in diagnosis include generalized herpes, varicella and dermatitis venenata.

SUMMARY

A case of bilateral symmetrical herpes zoster is reported.

The available literature is reviewed.

The observations in a number of reported cases of bilateral herpes zoster are reviewed.

Since the completion of this paper one of us (E. E.) has had the opportunity of observing a second patient with bilateral herpes zoster. A brief summary is offered. Mrs. R. D., an obese woman, aged 65, presented herself at the Alhambra Clinic in January 1936 because of a painful erythematovesicular eruption on the left shoulder. The attending physician diagnosed the eruption as zoster. The treatment consisted of oral administration of analgesics and local application of a 1 per cent solution of phenol in calamine lotion. The cutaneous manifestations slowly subsided and had completely disappeared one month later, although the pain was still present. About the middle of May an eruption said to be similar to the first appeared under the right breast, and one day later another appeared under the left breast. Both eruptions were preceded by severe pain, which has persisted. A few scattered groups of deep-seated vesicles appeared on an erythematous base and slowly regressed. A few similar lesions were scattered over the trunk. There were no lesions on the back. On June 17, the patient was admitted to a surgical ward of the Los Angeles County Hospital with the diagnosis of cholelithiasis, a diagnosis which was later confirmed by roentgen examination. At this time the patient was seen in consultation, and typical subsiding lesions and scars of zoster were present under each breast. The areas were markedly hyperesthetic. The Kolmer and the Kahn reaction of the blood were negative. Roentgen studies of the vertebrae revealed changes characteristic of advanced chronic hypertrophic arthritis. Therefore, the diagnosis of bilateral generalized and recurrent herpes zoster was made.

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25. Rosenthal, T.: Herpes Zoster and Tuberculosis of the Spine, J. A. M. A. **99**:213 (July 16) 1932.

HEMANGIO-ENDOTHELIOMA

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AND
L. H. WINER, M.D.
MINNEAPOLIS

The term hemangio-endothelioma is loosely used to identify tumors exhibiting similar clinical character but quite different microscopic structures. It is our purpose in this article to give a clear definition of hemangio-endothelioma and to attempt to show what tumors may rightfully be included under that title.

A hemangio-endothelioma is an angiomatous tumor possessing low grade malignancy, presenting a characteristic clinical appearance and having a precise histologic structure. It is composed essentially of blood spaces and vessels in different stages of development. The blood does not circulate through the tumor mass because of the immaturity of many of the vessels. A true endothelioma of the skin does not exist, for the origin of an endothelioma must be from endothelially lined structures, such as blood or lymph vessels; therefore, the so-called endothelioma of the external surface is either a hemangio-endothelioma or a lymphangio-endothelioma. In many cases a tumor called endothelioma is in reality an epithelioma or a sarcoma.

Golgi [1] first used the term endothelioma in 1869, and many authors from then on applied the term to a great variety of tumors. Stillians [2] explained the poor use of the term in a recent article. Most American textbooks of dermatology use the term endothelioma when referring to a tumor of the scalp.

Fick [3] in 1912 wrote a polemic against the use of the term endothelioma. He said that he doubted the ability of the endothelial cells to form more than a single layer. He stated that "only in angiomas and tumors from angiomas can one positively see proliferation of endothelium of a normal nature. Endothelium wherever it proliferates always has a definite form and is different from epithelium, and every

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1. Golgi, cited by Winkler, Karl, in Henke, F., and Lubarsch, O.: Handbuch der speziellen pathologischen Anatomie und Histologie, Berlin, Julius Springer, 1924, vol. 2, p. 1057.

2. Stillians, A. W.: Nevo-Epithelioma Adenoides (Cylindroma) of the Scalp, Arch. Dermat. & Syph. **27**:481 (March) 1933.

3. Fick, Johannes: Dermat. Wchnschr. **54**:488, 1912.

carcinoma-like or adenoma-like proliferation is of epithelial origin." He claimed that epithelial cells can resemble endothelial cells but that the converse is not possible.

Wise [4] in discussing endothelioma of the skin stated that a tumor called an endothelioma is in reality an epithelioma of the basal cell type or a true carcinoma. Fraser [5] classified hemangiomas and stated that in many instances a hemangioma involves the skin and subcutaneous tissue and may infiltrate and even occasionally metastasize.

Fraser [5] and Kettle and Ross [6] expressed the opinion that a hemangio-endothelioma occurs as a result of the further evolution of a hemangioma which after the tumor is formed continues to grow by infiltration and active endothelial proliferation, a vacuole formation continuing until a lumen is laid down for a future vessel and the tumor being formed by infiltration about this vascular stroma.

Busman [7] reported three cases of endothelioma following trauma and gave an extensive review of the literature. He concluded that in the classification of tumors the term endothelioma is a compromise between the histogenic and the morphologic basis.

Ludy [8] reported a case of endothelioma developing after trauma. Wiedman concurred in the diagnosis and said that the section showed the characteristic of an endothelial tumor.

Christopher [9] observed three cases of tumor of this kind. In his first case the tumor was congenital; in the second it developed shortly after birth at the site where forceps had been applied at delivery, and in the third, that of a 9 year old boy, it developed at the site of a former injury. On the basis of these cases he classified hemangio-endotheliomas clinically as either congenital or acquired.

Pulford [10] was of the opinion that hemangioma and lymph-vascular angioma although usually benign are potentially malignant. He expressed the belief that there is an intermediate stage between benign and malignant angioma, namely, the hemangio-endothelioma. He stated that malignant endothelioma of the blood or lymph vessels exists as a pathologic entity but is rare.

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4. Wise, Fred: Am. J. M. Sc. **157**:236, 1919.
5. Fraser, John: The Hemangioma Group of Endotheliomata, Brit. J. Surg. **7**:335, 1920.
6. Kettle, E. H., and Ross, Joan M.: A Contribution to the Study of the Endotheliomata, Lancet **1**:1012 (May 14) 1921.
7. Busman, George J.: Malignant Endotheliomas with Cutaneous Involvement, Arch. Dermat. & Syph. **6**:680 (Dec.) 1922.
8. Ludy, J. B.: Endothelioma Capitis, Arch. Dermat. & Syph. **7**:402 (March) 1923.
9. Christopher, F.: S. Clin. North America **5**:1085 (Aug.) 1925.
10. Pulford, D. Schuyler: Neoplasms of the Blood-Lymph Vascular Systems with Special Reference to Endotheliomas, Ann. Surg. **82**:710, 1925.

Borst [11] stated that a hemangio-endothelioma is a soft neoplasm rich in blood. Clinically the typical form is relatively benign, although it may cause local destruction of tissue and may recur when removed. It does not form widely disseminated metastases. Nevertheless, in some cases the growth is malignant, infiltrative and metastasizing. He stated that the variable microscopic picture of endothelioma is the cause for difficulty in the differential diagnosis, since it may resemble the picture of sarcoma, adenoma or carcinoma. He explained this variability in terms of the morphologic and biologic relations of angioplastic tissue. The normal course of vascular development is the formation of solid cords, secondary canalization and sprouting and uniting of the cords with each other, resulting in a network. In endothelioma the course of development is as follows: thin cell cords, tubes and finally coils, the walls of which are proliferating endothelium. If the endothelium takes a cuboidal form glandlike coils and cysts develop. In hemangio-endothelioma the cysts contain blood corpuscles. Further, the flat proliferated endothelial cells pile up one on the other, forming concentric rings. Borst expressed the belief that multiple hemangio-endothelioma is a generalized disease of primary multicentric origin rather than a condition spreading by metastasis. Most of the so-called endotheliomas of the salivary, parotid and submaxillary glands are mixed tumors of epithelial nature, except for a rarely occurring endothelioma of the parotid gland which begins as a lymphangioma and becomes a lymphangio-endothelioma.

Ewing [12] in discussing endothelioma of the skin stated that in no department has the doctrine of endothelioma suffered such violent transformation as in the field of tumors of the skin. Several quite destructive neoplasms have gradually come to be generally regarded as endothelioma only to lose their claims for classification in this category through more careful studies by critical observers. These tumors are as follows:

1. Lymphangioma tuberosum multiplex of Kaposi. Jacquet and Darier [13] showed in 1887 that tumors of this kind arise from the epithelium of the sweat glands. This condition is now called syringoma or syringocystadenoma.

2. Endothelioma of the skin, described by Braun and others, which Krompecher [14] proved to be identical with epithelioma adenoides cysticum of Brooke.

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11. Borst, M., in Aschoff, L.: Pathologische Anatomie, ed. 7, Jena, Gustav Fischer, 1928, vol. 1, p. 753.

12. Ewing, James: Neoplastic Diseases, ed. 3, Philadelphia, W. B. Saunders Company, 1928, p. 342.

13. Jacquet and Darier: Ann. de dermat. et syph. **8**:317, 1887.

14. Krompecher, E.: Beitr. z. path. Anat. u. z. allg. Path. **28**:1, 1900.

3. Endothelioma capitis of Spiegler, which Frieboes [15] and others have shown to be basal cell epithelioma.

In eliminating these groups Ewing stated that neither Darier nor Unna admitted the existence of genuine endothelioma of the skin. Ewing did, however, admit that hemangio-endothelioma of the skin or subcutis does occur.

Zurelle [16] described hemangio-endotheliomas as "red or brown-red nodules, from the size of a pinhead to that of a lentil, which protrude slightly above the surface of the skin." He expressed the belief that under this term must be classified all angioplastic sarcomas which have a histologic structure consisting chiefly of proliferating endothelium. This is in contrast to the picture of an ordinary angioplastic sarcoma, which consists of fewer capillaries and vessels and is therefore less bluish red and of a firmer consistency than an ordinary sarcoma.

Winkler [17] in a discussion of tumors of the skin considered angiosarcoma, endothelioma, perithelioma, hemangio-endothelioma and sarcoma of vascular tissue as synonymous terms.

Montgomery [18] in a recent article stated that "the majority of so-called endotheliomas or sarcomas of the extremities will prove, on careful histologic study of multiple or serial sections, to be squamous-cell epitheliomas, and that definite origin from the epidermis can be demonstrated, except in the metastatic lesions."

Tumors are classified from the standpoint of the predominating cell, considering not only its structure but also its embryonic origin. Mallory [19] said that the type of cell is the most important element in every tumor. Slow-growing tumors exhibit differentiation; rapidly growing tumors must be recognized by their embryonic origin. But strictly embryologic classification is not sufficient in classifying endotheliomas because the tumor may have its origin either in the blood or in the lymph vessels. The term endothelioma, as employed by us, designates a tumor in which the endothelial structure serves as a matrix for the tumor parenchyma and the endothelial cell is in the same relationship to the growth as a whole as the epithelial cell is to cancer of the

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15. Frieboes, W.: Beiträge zur Klinik und Histopathologie der gutartigen Hautepitheliome, Berlin, S. Karger, 1912.

16. Zurelle, E., in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten: Geschwülste der Haut, Berlin, Julius Springer, 1932, vol. 12, pt. 2, p. 835.

17. Winkler, Karl, in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten: Geschwülste der Haut, Berlin, Julius Springer, 1932, vol. 12, pt. 2, p. 778.

18. Montgomery, Hamilton: Epitheliomas of the Arm Simulating Endothelioma, Sarcoma and Sporotrichosis, M. Clin. North America **19**:605 (Sept.) 1935.

19. Mallory, F. B.: Principles of Pathologic Histology, Philadelphia, W. B. Saunders Company, 1914, pp. 105 and 275.

skin. But identification of the cell alone is not sufficient to identify endothelioma, as the arrangement, blood content and attachments must all be taken into consideration before the final decision is made. Mesoderm is derived from the primitive ectoderm and extends laterally from the primitive streak and grove between ectoderm and endoderm. In becoming malignant a tumor of endodermal origin may therefore revert to an embryonic type and show morphologic characteristics of both epithelial tissue (carcinoma) and mesodermal tissue (sarcoma).

The aforementioned fact is responsible for the lack of unanimity among pathologists concerning this type of tumor. It quite frequently happens that one pathologist diagnoses a tumor as endothelioma, whereas another diagnoses the same growth as sarcoma. However, both pathologists are in agreement that they are dealing with a new growth of low degree of malignancy, and this is usually borne out by the clinical fact that a tumor of this type produces metastases.

Ewing [20] said that the most reliable sign of an endothelioma is the minute character of the cells. The typical cells are translucent and polyhedral and have pale nuclei devoid of acidophilic nucleoli. There may be only a few such cells, the majority failing to show this characteristic. Many observers lay too much stress on the presence of columns of blood and on the vascularity of the tumor. In our opinion, the more convincing observation is the relationship of the adjacent tumor cells to the vascular stroma. This is also Borst's opinion, as well as that of Bell.[21]

CLINICAL DESCRIPTION

The tumor may occur on almost any part of the body. Its size may vary from that of a pea to that of an orange. It is dark red and moderately soft and may or may not be surrounded by satellites. Some of our patients presented a large tumor. The neoplasm often ulcerates on trauma and bleeds profusely. It infiltrates and can attach itself to underlying tissue and bone or to the overlying skin. When it attaches itself to the skin it may at times form a pedunculated tumor. It is not tender and is not painful when manipulated.

HISTOLOGIC STRUCTURE

The tumor consists microscopically of three related zones, each gradually fusing into the other without any definite line of demarcation. By this schematic method the explanation of the histologic picture is simplified. In the center of the mass are mature structures, and

20. Ewing, James,[12] p. 336.
21. Bell, E. T.: Personal communication to the authors.

progressing toward the periphery the vessels gradually become more immature. Thus the central core consists of capillaries filled with blood. Surrounding this central core are solid cords or strands of cells which are in the process of forming lumens, while on the extreme outer border or periphery of the tumor are irregular masses of cells showing no features of differentiation. The individual cells are large and exhibit a clear cytoplasm and a nucleus that is small in comparison with the size of the cell. These cells are endothelial cells but cannot be recognized as such except when an embryologic capillary with a lumen is formed.

DIAGNOSIS

The clinical diagnosis is difficult, but a soft reddish tumor growing slowly is suggestive of hemangio-endothelioma. Microscopically, the mature capillaries filled with blood, the solid cords and the masses of cells of undifferentiated type are the diagnostic criteria. Hemangio-endothelioma must be differentiated from hemangioma, vascular sarcoma, adenocarcinoma, granuloma pyogenicum and cylindroma.

Hemangioma shows mature vessels and capillaries but no undifferentiated cell masses or cords.

Vascular sarcoma may at times be confused with hemangio-endothelioma owing to the close relationship of tumor cells to nutrient blood vessels. The former exhibits not only capillaries but larger vessels. The masses of cells are more or less fascicular.

Adenocarcinoma of internal organs forming cutaneous metastases is clinically harder to diagnose and as a rule does not affect the color of the skin. The cytoplasm of the adenocarcinoma cells is darker, and the cell has a relatively larger nucleus and exhibits greater differentiation than the typical hemangio-endothelioma cell.

Granuloma pyogenicum is differentiated clinically by its pedunculated or sessile nature and by the fact that it bleeds easily, is smaller than hemangio-endothelioma, shows no infiltration and grows upward. Its microscopic features, namely, capillaries, polymorphonuclear cell infiltrate and a superficial crust consisting of stratum corneum and pus cells, are characteristic.

The clinical picture of cylindroma consists of multiple firm white tumors of the scalp which microscopically show deeply stained small uniform cells containing cholesterol crystals. These cells are arranged as acini but exhibit no irregular masses or cords of undifferentiated cells.

REPORT OF CASES

CASE 1.—A. S., a boy aged 14, was admitted to the Minneapolis General Hospital on Feb. 22, 1926; according to the history he had been struck on the left

breast by a piece of coal six months previously. A tumor had subsequently formed at the site of trauma and had grown gradually up to the time of admission, reaching the size of a plum.

Examination revealed a tumor of the left pectoral region. It was a soft, smooth globular red mass attached by means of a narrow pedicle. Surrounding this mass over an area of about 12 cm. square were numerous small tumors.

The large tumor and one satellite were excised on March 12, 1926. A roentgen treatment was given to the wound after the operation. The remainder of the satellites were destroyed with the actual cautery. There has been no recurrence at the time this report is written.

Gross Pathologic Structure.—The tumor was a soft cauliflower-like growth measuring 3 cm. in diameter and 2 cm. in height. On cross-section the cut surface

Fig. 1.—Hemangio-endothelioma and satellites.

was seen to be grayish spongy tissue covered with epithelium. There was no downward invasion of tumor tissue into the normal structures.

Microscopic Examination.—This showed the epidermis to be intact. The cutis was distorted and involved by the tumor mass, which it surrounded with a dense framework of connective tissue. The tumor proper was made up of capillary spaces filled with blood. Surrounding these capillary spaces were masses and cords of large round cells containing a large amount of cytoplasm and clear vesicular nucleii.

Diagnosis.—The diagnosis was hemangio-endothelioma.

Case 2.—E. T., a boy aged 11 years, was admitted to the Minneapolis General Hospital on March 12, 1930, complaining of a painful tumor of the right shoulder of one month's duration.

Examination revealed a large red soft fusiform nodular tumor, 8 cm. long and 4 cm. in diameter, on the right shoulder. It bled easily on the slightest trauma and moved with excursion of the scapula. A biopsy showed irregular masses of

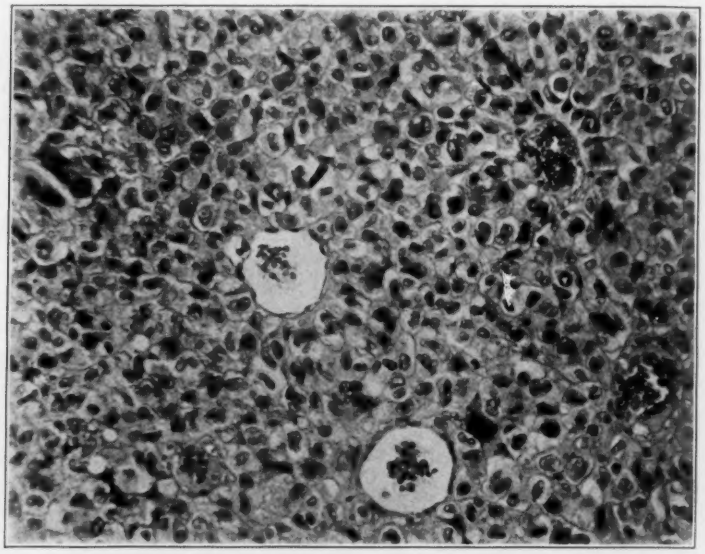

Fig. 2.—Low magnification showing capillaries and cords and nests of cells.

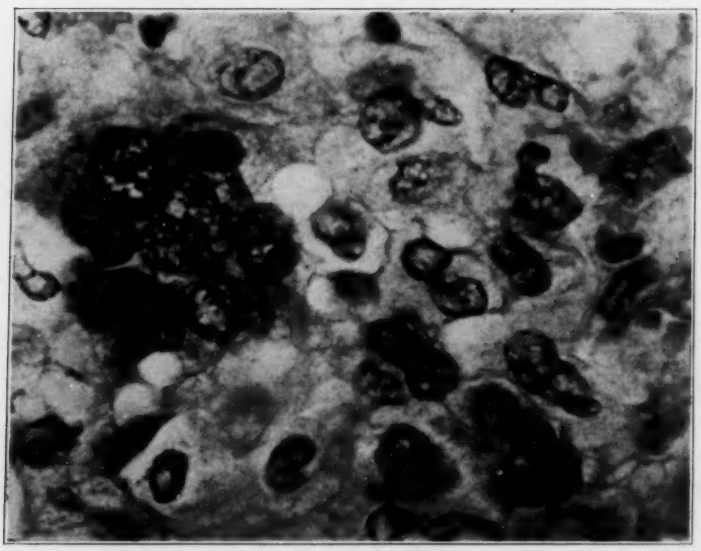

Fig. 3.—High magnification showing capillaries and cords of cells.

cells with vesicular nuclei and definite capillary formation. These cells were seen to infiltrate the muscle tissue. A diagnosis of hemangio-endothelioma was made. Permission to operate was refused until April 11, 1930, when the mass was incom-

pletely removed on account of the severe bleeding. Five weeks later a more complete removal was accomplished.

In July 1930 the parents noted two or three small tumors appearing at the site of the first removal. These rapidly increased in size, and the patient was taken to the University of Minnesota Hospital on Nov. 28, 1930.

The recurrent tumor mass over the right scapular region was irregular and deep purple and measured about 8 cm. in diameter. There had been some erosion and bleeding from the tumor. The patient was given 300 cc. of whole blood before the operation.

The tumor had invaded the scapula, necessitating removal of the entire scapula except for the glenoid fossa and the acromion. The subscapular muscles had to be excised because of invasion by the tumor. The wound was allowed to granulate, and with the help of implant grafts it healed in two months. On March 7, 1932, a roentgenogram of the chest showed a large mediastinal tumor of the region of the left hilus. This was treated with high voltage roentgen therapy. The tumor disappeared, and at the time of writing the patient is in good health.

Case 3.—P. C., a man aged 55, was admitted to the outpatient department of the Minneapolis General Hospital on Feb. 21, 1924, with a tumor on the right wrist. This tumor had appeared seven years before. Two years after its appearance it had been excised, but it had recurred within three or four months and had continued to grow slowly up to the time of admission. It was about 2.5 cm. in diameter and 1.5 cm. high. The tumor was excised, and 400 milligram hours of radium therapy was given. There has been no recurrence at the time of writing. Histologically the tumor was diagnosed as a hemangio-endothelioma.

Case 4.—A. J., a woman aged 79, was admitted to the University of Minnesota Hospitals on April 17, 1933, complaining of a tumor of the iliac region on the right side. She stated that ten years previously she had fallen down a stairway and injured her hip. One year after the accident she noted the swelling and the developing mass. Since then the tumor had been excised and recurred four times.

Examination revealed a soft reddish tumor about 10 cm. in diameter which was adherent to the skin. Roentgen examination showed no attachment of the tumor to the iliac crest. On April 19, 1933, an encapsulated tumor, together with the overlying skin and underlying fascia, was excised by electro-endothermy. There has been no recurrence at the time of writing. The microscopic diagnosis was hemangio-endothelioma.

Case 5.—M. Y., a female infant, was brought by her mother for treatment of a birthmark on March 28, 1931. The baby had been delivered at term by cesarean section on Jan. 31, 1931. The child was entirely normal until two weeks before the mother sought medical advice. At that time it was noted that there was a swelling in the region of the right parotid gland, just posterior to the lower border of the ear.

Examination revealed a well circumscribed soft red globular mass, 1.5 cm. in diameter and 0.5 cm. high. This was diagnosed as a hemangioma, and a very small dose of radium radiation was given on April 6, 1931. By April 22, 1931, the mass had doubled in size, but it was still well localized over the parotid gland. A biopsy was made at this time and showed numerous capillaries surrounded by solid cords and masses of cells. Here and there in the section were glandular structures suggesting parotid gland tissue. A diagnosis of hemangio-endothelioma was made. On May 6, 1931, 1,150 milligram hours of radium was applied, and definite decrease in the size of the growth was apparent within three days. On July 1, 1931, an increase in the size of the tumor was noted and a further

treatment with radium was advised. The child was taken to another city for treatment, where further treatment with radium was given. On July 30, 1931, the mass was unchanged. No further history was available.

CASE 6.—J. H., a man aged 30, was admitted to the University of Minnesota Hospitals on Oct. 19, 1930, with a tumor on the right side of the lower lip. This tumor had been present for a number of years, but in the last three months it had doubled in size.

Examination revealed a lesion 2 cm. in diameter, slightly elevated above the level of the surrounding area. The consistency of the tumor was about that of the adjacent lip tissue. A clinical diagnosis of carcinoma was made and the lesion excised widely. Histologic study revealed the tumor to be a hemangio-endothelioma. There has been no recurrence at the time of writing.

SUMMARY

From a review of the literature and a study of six cases of hemangio-endothelioma one is impressed by the fact that this term should be limited to the designation of a particular type of tumor which cannot positively be identified clinically but which has a characteristic microscopic structure. Hemangio-endothelioma resembles hemangioma but appears later in life and often at the site of trauma. In no instance did we record a change from a benign angioma which had been present for some time into a hemangio-endothelioma. Therefore, trauma cannot be considered as altering a benign condition previously present. The lesion always has a color which is indicative of blood spaces, the smaller being red and the larger bluish red. It is almost invariably elevated above the surface of the skin and may even have a pedicle. On the other hand, infiltration into the underlying tissues and even into bone may occur. There is no change on the surface—the skin covering the tumor is smooth and scales and verrucous formations are absent. Hemangio-endothelioma shows no predilection for a special part of the body, and it does not occur more commonly over large blood vessels than in other locations. The mucous membranes may be either a primary or a secondary site. The size of the tumor varies decidedly, and, as is to be expected when satellites are present, the original tumor is much larger than the satellites. In our cases the lesions varied from 1 to 10 cm. in diameter and from 0.5 to 1.5 cm. in height. In one of our cases the tumor had penetrated through the muscles, through the scapula and into the muscles under the scapula. The origin and attachment of the tumor are usually in the subcutis. We observed no instance of a tumor originating from deeper structures and breaking through to the surface. Most of the patients did not complain of pain. Manipulation caused some pain, and continued trauma produced bleeding. The degree of local malignant change is variable. In some cases the lesion is decidedly benign. It does not have the power to extend at the base, even though it may

protrude and grow above the surface. In one of our cases, as noted, the lesion was malignant enough to penetrate deeply. The degree of malignancy with respect to ability to metastasize is very low. It is doubtful whether subsequent growths can be regarded as metastases from a preceding tumor. In cases in which such growths occur there is probably a multicentric origin.

As a rule, wide, thorough excision is sufficient to effect a cure. The lesion is also responsive to radiation. Recurrence is possible and has been noted, but the recurrent tumor seems to be as amenable to treatment as the original growth. The prognosis as to life is good. No case of toxemia due to absorption from this type of malignant disease occurred in our series.

Microscopically the tumor is essentially a conglomerate mass of capillaries and blood spaces containing blood but not circulating blood. There is a dense collection of clear vesicular large cells arranged about the vascular stroma.

The term hemangio-endothelioma seems to be well chosen and should be restricted for use in identifying only this type of growth.

CONCLUSIONS

A definition of hemangio-endothelioma and restrictions for use of the term are given.

The tumor is a relatively benign new growth the origin of which is from endothelium-lined spaces.

It is amenable to proper treatment.

Six cases of hemangio-endothelioma are reported in detail.

In three of our six cases there was a definite history of trauma.

ECZEMA VACCINATUM

JAMES WILLIAM TEDDER, M.D.
NEW ORLEANS

Postvaccinal eruptions, according to Danziger,[1] were first collectively studied and classified in 1881 by Behrend, who described erythematous, urticarial and herpetic dermatoses as well as the pustular eruptions termed *vaccine generalisée* by various French writers. Since then the literature relevant to vaccinia in general has become voluminous. The purpose of this discussion is not to review these contributions completely but rather to attempt to clarify the confusion which exists as to the relationship of generalized vaccinia, eczema vaccinatum, Kaposi's varicelliform eruption (eczema herpetiforme) and pustulosis variolaeformis (varioliformis) acuta.

A considerable number of cases of eczema (especially of the face and scalp) or some other itching dermatosis complicated by an acute eruption of umbilicated pustules occurring shortly after vaccination or contact with a vaccinated person have been reported under the title of eczema vaccinatum or, when the lesions were more widely spread over the cutaneous surface, generalized vaccinia.

Among the early reports were those of Martin,[2] in 1882, and of Blochmann[3] (a zoologist whose own son lost the sight of his right eye as a result of corneal involvement in eczema vaccinatum). Blochmann collected one hundred and forty case reports from the literature from 1880 to 1904. Martin's patient was a nursing child whose mother and brother were vaccinated sixteen days before the appearance in the child of a generalized eruption of umbilicated vesicles which healed with pitting.

The child suffered from eczema and for this reason had not been vaccinated. Martin expressed the belief that the virus had been transmitted through the mother's milk. He further mentioned three other

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1. Danziger, Felix: Ueber Vaccine generalisata, München. med. Wchnschr. **54**:1583 (Aug. 6) 1907.

2. Martin, Henry Austin: A Most Rare, Possibly Unique Case of General Eruption of Vaccinia, M. Rec. **21**:393 (April 15) 1882.

3. Blochmann, F.: Ist die Schutzpockenimpfung mit allen notwendigen Kautelen umgeben? Erörtert an einem mit Verlust des einen Auges verbundenen Falle von Vaccineübertragung, Tübingen, F. Pietzker, 1904.

cases of vaccinia in which the patients had been under his care and called attention to a report of a French physician, Conzals, who in 1810 attempted to vaccinate a patient by having her sniff a pinch of powdered vaccination scabs after attempts at cutaneous vaccination had been unsuccessful. Within four days there were inflammatory changes in the skin at the sites of previously attempted vaccination, and in six days a generalized eruption of one hundred and eighty vesicles of the vaccinal type appeared.

The most recent report in the American literature concerning eczema vaccinatum is that by Ellis,[4] in 1935, who reported typical examples occurring in eczematous twins, one of whom died. A third older brother had been vaccinated about two weeks previously. Ellis expressed the opinion that a clinical differentiation between eczema vaccinatum, Kaposi's varicelliform eruption and pustulosis vacciniformis (varioliformis) acuta is impossible and that a positive reaction to a corneal inoculation test must be obtained to prove that the clinical picture exhibited is that of eczema vaccinatum. Ellis expressed the belief that eczema vaccinatum and generalized vaccinia are essentially the same process and that the virus is disseminated by the blood stream.

Kaposi,[5] in 1887, described "a very alarming complication of eczema infantum" characterized by the appearance of numerous lentil-sized vesicles developing either singly or in groups and later becoming umbilicated, the eruption being accompanied by fever and cutaneous edema. He applied the name eczema herpetiforme to this varicella-like eruption and opined that it was a local infection perhaps by a fungus.

A few years later, in 1898, Juliusberg[6] observed an eczematous unvaccinated child 1½ years of age in whom there suddenly developed a vesicular eruption involving the face, chest, left palm and region about the anus. The individual lesions resembled the vaccination pustules described by Jenner, although neither the child nor any one in his surroundings had been recently vaccinated. The patient died during the first week of the illness, and autopsy showed only intestinal ulcerations. Staphylococcus pyogenes-aureus was cultured from the cutaneous lesions. Juliusberg mentioned the clinical resemblance of the condition in question to variola and varicella, and the balloon degeneration described by Unna was observed microscopically in the epidermal cells. He stated that the absence of systemic changes at autopsy and the lack of involvement of the mucosae distinguished the disease from smallpox. Moreover, he expressed the belief that the severe course militated

4. Ellis, Francis A.: Eczema Vaccinatum: Its Relation to Generalized Vaccinia, J. A. M. A. **104**:1891 (May 25) 1935.

5. Kaposi, cited by Juliusberg.[6]

6. Juliusberg, F.: Ueber Pustulosis acuta varioliformis, Arch. f. Dermat. u. Syph. **46**:21, 1898.

strongly against a diagnosis of varicella or vaccinia, and he finally concluded that the condition was a pyoderma due to the pyogenic staphylococcus. He definitely regarded the process as identical with eczema herpetiforme described previously by Kaposi. Shortly after the death of the child there developed in the mother, who had been vaccinated successfully as a child and had been revaccinated twelve years later without results, lesions of the upper eyelid similar to those exhibited by the child. She had carried the baby on her left side, and its head had lain on her shoulder. The lesions healed uneventfully in a short time.

Since Kaposi and Juliusberg described the disorder there have been several reports of the same condition either as Kaposi's varicelliform eruption or as pustulosis vacciniformis (varioliformis) acuta.[7].

Baar stated that a diagnosis of eczema vaccinatum could be excluded in his case; he called the condition pustulosis vacciniformis and discovered staphylococci in the lesions. His patient, however, was suffering from eczema vaccinatum associated with the sudden appearance of pustules on the eczematous areas.

Freud,[7c] in commenting on a case of fatal pustulosis vacciniformis in a 6 month old eczematous infant, stated that inoculation of the contents of the lesions into the cornea of a rabbit produced a severe keratitis although typical Guarnieri bodies could not be found. Neither the patient nor any one in the surroundings had been recently vaccinated, and on this basis Freud excluded a diagnosis of vaccinia. After observing a second fatal case he felt that the condition was caused by a virus or was a mixed infection by a virus and staphylococci.

A similar history was obtained in Freund's [7f] case of pustulosis vacciniformis acuta. A 2½ year old child who had suffered from eczema of the hands, face, elbows and popliteal spaces for a year became suddenly ill with high fever and exhibited an eruption of centrally depressed

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7. (*a*) Rasch, cited by Bendre.[7j] (*b*) Finklestein, cited by Freund.[7f] (*c*) Freud, Paul: Ueber Pustulosis vacciniformis acuta, Monatschr. f. Kinderh. **51**: 28, 1931. (*d*) Baar and Freud: Ein Fall von Pustulosis vacciniformis, Wien. med. Wchnschr. **81**:1157 (Aug. 29) 1931. (*e*) Moro, cited by Freund.[7f] (*f*) Freund, H.: Zur Aetiologie der Pustulosis vacciniformis acuta (Kaposi-Juliusberg), Dermat. Wchnschr. **98**:53 (Jan. 13) 1934. (*g*) Brown, W. H.: Kaposi's Varicelliform Eruption, Brit. J. Dermat. **46**:1 (Jan.) 1934. (*h*) McLachlan, D. A.: Kaposi's Varicelliform Eruption, ibid. **46**:8 (Jan.) 1934. (*i*) Frühwald, Richard: Pustulosis vacciniformis acuta beim Erwachsenen, Dermat. Wchnschr. **99**:922 (July 14) 1934. (*j*) Bendre, Vishnu: Ueber das Krankheitsbild der varioliformen Pyodermie, (Pustulosis varioliformis acuta), ibid. **100**:305 (March 16) 1935. (*k*) Goeckerman, W. H., and Wilhelm, L. F. X.: Kaposi's Varicelliform Eruption, Arch. Dermat. & Syph. **32**:59 (July) 1935. (*l*) Corson, E F., and Ludy, J. B.: Kaposi's Varicelliform Eruption, Am. J. Dis. Child. **50**:1476 (Dec.) 1935.

pustules in the mouth and on both hands, the disorder later spreading to the forearms, knees and legs. Freund found Guarnieri corpuscles in some of the serial sections from the cornea of a rabbit which had been inoculated with the contents of a fresh pustule. Although there was no history of contact with a vaccinated person, the corneal test left no doubt as to the virus etiology, even though staphylococci were recovered in enormous numbers from the lesions. Hence Freund suggested that the disease was a mixed infection with weakly virulent vaccine and highly virulent staphylococci.

Brown,[7g] whose patient was an eczematous infant, and McLachlan,[7h] who reported the case of a woman vaccinated nine years previously, stated no definite opinions as to etiology, though yellow staphylococci were recovered in pure culture from the lesions in the case reported by McLachlan.

Frühwald [7i] observed an eczematous young man aged 18 in whom umbilicated vesicopustules suddenly developed over and around the eczematous areas. Although smallpox had been suspected from the clinical appearance of the eruption, both inoculation of rabbits and histologic examination did not point to that diagnosis. Frühwald observed two other cases of a similar disorder in a man of 20 and in a girl of 18, respectively, both of whom suffered from seborrheic eczema. Frühwald found no possible connection with vaccination in any of the three cases and felt that the symptom complex termed pustulosis vacciniformis acuta was not a complication of eczema due to vaccine.

Bendre's [7j] patient was a 28 year old sailor who suffered from pain, swelling and an eruption of grouped pustules on the medial surface of the right foot which appeared eight days after he sustained an injury. Many of the pustules were pierced by a hair. The man had been vaccinated three times previously at the ages of 1, 8 and 20 years, respectively, and shortly before the outbreak of the eruption had returned from a voyage during which none of his companions had been vaccinated or had suffered from variola. Studies for Paschen bodies gave negative results, and on culture of the pustules staphylococci were recovered in great numbers. The eruption healed in nine days. The lack of true umbilication of the lesions, the absence of previous eczema, the strict localization to the foot, the short course, the absence of contact with vaccine, the lack of pitted scars on healing and the follicular involvement in this case pointed to a diagnosis of impetigo simplex (Bockhart) rather than to one of pustulosis vacciniformis acuta or eczema vaccinatum.

The patient of Goeckerman and Wilhelm,[7k] a woman aged 32 who was suffering from generalized eczema, exhibited edema and an eruption of umbilicated vesicles on the face, neck, chest and arms. The lesions healed in eight days, and there was residual pitting. Goeckerman

and Wilhelm stated that they had no idea as to the etiology of the condition, which they reported as Kaposi's varicelliform eruption.

In 1935 Corson and Ludy [71] reported three cases of Kaposi's varicelliform eruption in ezcematous children aged 1, 1½ and 9 years, respectively, all of whom recovered. Corson and Ludy called attention to the resemblance of the eruption to zoster, variola, varicella and vaccinia but ruled out the latter on account of the lack of history of contact with vaccine.

The virus etiology of the condition reported as eczema vaccinatum has been universally accepted, although there has been considerable discussion as to whether the lesions develop as a result of repeated auto-inoculations or whether the virus is disseminated hematogenously and becomes active in the skin.

In contrast, the etiology of contact infection has been undisputed in cases reported as examples of Kaposi's varicelliform eruption or pustulosis vacciniformis (varioliformis) acuta, while there has been much debate and speculation as to the etiologic agent—a staphylococcus, a virus or a staphylococcus plus a virus having been considered possibly causative.

CLINICAL DESCRIPTION

From a careful comparison of photographs illustrating eruptions of eczema vaccinatum, Kaposi's varicelliform eruption and pustulosis vacciniformis (varioliformis) acuta and from a study of the descriptions of these conditions, it is evident that the two conditions are identical in appearance.

The patients almost without exception have eczema (usually, but not always, on the face and scalp) or some other itching dermatosis. Then suddenly there is an outbreak of multiple vesicles appearing either singly or in groups, which are at first filled with clear serum, later becoming purulent and umbilicated and resembling the vaccination pustules described by Jenner. The areas on which the lesions appear become intensely swollen and inflamed. Most of the lesions are found on the previously eczematous skin, although a few appear on the apparently intact surrounding integument. In some instances the eruption has become practically generalized. The vesicular pustules usually continue to appear in crops for from several days to a week. The regional lymph nodes become swollen and painful, and rarely abscesses are formed (Danziger [1]). The patients have general malaise and high fever, and when the course is severe they die of general sepsis, though when the course is more benign the lesions become drier in from a week to ten days, forming crusts which usually fall away in about two weeks, leaving pigmented areas and pitted scars.

In cases in which this clinical picture obtained and in which the disorder was diagnosed as eczema vaccinatum there was a definite his-

tory of vaccination either of the patient or of some one in the surroundings within from a few days to about three weeks before the outbreak of the vesicles. Inoculation of the contents of the lesions into the cornea of rabbits has produced keratitis, and Guernieri bodies have been observed histologically.

Fatal cases of eczema vaccinatum have been reported by Danziger,[1] Blochmann,[3] Riether,[8] Schiller,[9] Baginsky,[10] Meyer,[11] Geronne,[12] Gaté, Michel and Boyer [13] and Ellis.[4] Lesions have been reported to occur on almost all areas of the body. Riether [8] and Gaté, Michel and Boyer [13] are among those who have noted pustules on the eyelids. Blochmann,[3] Gaté, Michel and Boyer,[13] Dieter,[14] and Hillemanns [15] observed lesions on the cornea. Danziger [1] and Meyer [11] noted erosions on the mucosa of the tongue, and Lubinski [16] reported the occurrence of pustules on the nasal septum. The genitals are a favorite site. Cases of the disorder in which the eruption was not always preceded by eczema, however, have been reported by Keining,[17] Musger,[18] Eichoff,[19] Leven,[20] Maillefert,[21] Eminson [22] and Lamb.[23]

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8. Riether, Gustav: Ein Fall von reichlicher Entwicklung von Vaccine Pusteln auf dem Boden einer Kopf-und Gesichtsekzemes, Wien. klin. Wchnschr. **44**:1006, 1896.

9. Schiller, A.: Vaccine generalisata bei drei Geschwistern, Monatschr. f. Kinderh. **5**:73, 1906.

10. Baginsky, A.: Ein Fall von Vaccine généralisée, Berl. klin. Wchnschr. **45**:1289, 1908.

11. Meyer, Ludwig F.: Die Vakzineübertragung und ihre Verhütung, Therap. Monatsh. **23**:150, 1909.

12. Geronne, A.: Ueber schwere Vakzineerkrankungen und ihre Prophylaxe, Berl. klin. Wchnschr. **47**:133 (Jan. 24) 1910.

13. Gaté, J.; Michel, P. J., and Boyer, C. E.: Vaccine étendue du visage et du cou chez un enfant atteint d'eczéma de la joue: Décès; encéphalite probable, Bull. Soc. franç. de dermat. et syph. **39**:46 (Jan.) 1932.

14. Dieter, cited by Lubinski.[16]

15. Hillemanns, cited by Lubinski.[16]

16. Lubinski: Akzidentelle Vakzination der Nasenschleimhaut, München. med. Wchnschr. **52**:2328 (Dec. 27) 1904.

17. Keining: Akzidentelle Vakzination kompliziert durch ein polymorphes Exanthem, Dermat. Wchnschr. **92**:735, 1931.

18. Musger: Autoinokulation mit Vakzine, Dermat. Wchnschr. **92**:673, 1931.

19. Eichoff, P. J.: Ein Fall von Vakzineinfektion, Med. Klin. **49**:1487 (Dec. 8) 1907.

20. Leven, Leonard: Fall von Vaccineübertragung auf die Vulva, Deutsche med. Wchnschr. **34**:1856, 1908.

21. Maillefert, Ernst: Ein Fall von Infection der genitalien mit Vaccine, München. med. Wchnschr. **46**:589, 1899.

22. Eminson, F. T. B.: Accidental Vaccine Inoculation on the Vulva, Brit. M. J. **2**:1217, 1888.

23. Lamb, J. H.: Note on a Curious Case of Vaccination, Lancet **1**:29, 1898.

The first case, which was observed in association with Platou,[24] typifies the course of severe eczema vaccinatum.

CASE 1.—R. V., an unvaccinated boy aged 5 months, who had suffered from weeping infantile eczema of the face for two and a half months, was admitted to the Minneapolis General Hospital because the skin of the face had suddenly become swollen and involved by multiple pustules two days previously. At the time of admission no history of vaccination or of contact with a vaccinated person could be obtained. Careful repeated questioning later brought out the fact that the patient's brother had been vaccinated about two weeks previously.

On admission there were several round umbilicated vesicular pustules superimposed on plaques of infantile eczema of the cheeks. The lesions, which began

Eczema vaccinatum.

on the left cheek, spread over the entire face and scalp within five days after their original appearance, involving the nose, lips and tip of the tongue. There was bilateral swelling of the cervical nodes, and the temperature varied from 101 to 104 F. The child's general condition became gradually worse, and on the tenth day of the illness strabismus and stupor developed which necessitated feeding by tube. At this time the lesions became drier and appeared to be involuting. On the sixteenth day of the illness (fourteen days after admission) abdominal distention and signs of pneumonia developed, and the patient died.

Autopsy showed bronchopneumonia. There were no macroscopic pathologic changes in the brain, but the intracranial injection of glycerinated brain tissue

24. Platou, E. S.: Eczema Vaccinatum, Am. J. Dis. Child. **48**:333 (Aug.) 1934.

into rabbits caused death in from twenty-four to forty-eight hours with definite involvement of the central nervous system. Two rabbits inoculated in the same way with a Mandler filtrate of the glycerinated suspension died in seven and fourteen days, respectively.

Culture of the spinal fluid and blood remained sterile. Culture of the brain tissue yielded a pure growth of streptococci, while the lesions themselves showed staphylococci.

COMMENT

In order to clear up the confusion relevant to eczema vaccinatum, Kaposi's varicelliform eruption and pustulosis vacciniformis (varioliformis) acuta, two chief questions must be answered:

1. Is eczema vaccinatum etiologically as well as clinically identical with Kaposi's varicelliform eruption and pustulosis vacciniformis (varioliformis) acuta?

2. Is eczema vaccinatum the cutaneous expression of repeated autoinoculations of the vaccine virus, or is the virus disseminated hematogenously to lodge and multiply in the skin, especially at points of lowered resistance (eczematous areas)?

No one disputes the fact that the terms Kaposi's varicelliform eruption and pustulosis vacciniformis (varioliformis) acuta are synonymous. The onset and location of the eruption in eczematous areas, the individual delled, vesicular pustular lesions and the usually favorable but occasionally fatal outcome leave no doubt that clinically at least there are no major differences in the conditions described under any of the previously mentioned titles. The only possible reason, then, for not identifying such symptom complexes as eczema vaccinatum in every case is the absence of a history of vaccination in the patient or of contact with a person recently vaccinated and a negative result of a properly and carefully made Paul test.

As to the first point, I believe that although a history of exposure to the vaccine virus is important presumptive evidence in favor of a diagnosis of eczema vaccinatum, the absence of such a history does not prove that exposure has not taken place. In the case here reported, for example, a history of such exposure was not obtained until the parents of the patient had been repeatedly and carefully questioned. Had this questioning not been repeated time and again, the case would have appeared to be a perfect example of either pustulosis vacciniformis acuta or Kaposi's varicelliform eruption. All patients' intelligence is not such that they are immediately capable of giving important points which aid in diagnosis, especially in cases comparable to that of Eichoff [19] (eczema vaccinatum), in which infection took place in a bathtub in which a recently vaccinated child had bathed a short time previously, or of Meyer,[11] in which the affected child was left under the care of a woman whose child had been vaccinated. In taking a history

indirectly from parents one must keep in mind that important sources of contact may have seemed trivial and irrelevant and hence are completely forgotten. It must be remembered that in any infection it is not possible to find the source in every case even though the etiologic agent be known.

The result of the corneal inoculation test, however, is concrete evidence either for or against a virus etiology in cases of any of these eruptions. In reviewing the cases described as instances of pustulosis vacciniformis acuta or Kaposi's varicelliform eruption it is found that in most instances, as far as can be ascertained from the reports, such tests were not performed since vaccinia had been ruled out as a diagnosis on the bases of the history alone. In one of Freud's [7e] cases, though, the test was made in a case described as one of pustulosis acuta. A severe keratitis developed in the animal although Guarnieri bodies were not found.

The result of the Paul test in Freund's case was definitely positive—a proof of a virus etiology. In Frühwald's [71] first case, one of pustulosis vacciniformis acuta, corneal tests gave negative results. It was not stated in either Frühwald's or Freud's case whether or not serial sections were made in an effort to find Guarnieri bodies. If this procedure was not carried out it is possible that the results of the test may have been positive. The presence of staphylococci as contaminants in any pustular cutaneous lesion is so common that its value in determining an etiologic agent is of no value. In view of the completely identical appearance and course of these three conditions it is logical to assume that they are the same etiologically. The term eczema vaccinatum seems preferable to either of the other two since it is descriptive and brief.

The next important points to discuss are the mode of development of the lesions in eczema vaccinatum and the possibility of its relationship to so-called vaccinia generalisata, under which title the disorder has also been reported at various times.

Postvaccinal eruptions have been classified in various ways. The classification proposed by Paschen,[25] with slight modifications, seems the most logical:

1. Eruptions due to contact infection by the vaccine virus
   - A. Secondary vaccination near the original site (*Nebenpocken*) due to spread of the virus by way of the lymphatics
   - B. Secondary accidental vaccinations at distant sites; no previous cutaneous disease
   - C. Eczema vaccinatum; secondary infection on previously diseased skin

25. Paschen, E.: Vaccine und Vaccineausschlage, in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1932, vol. 2, p. 164.

2. Eruptions presumably on a hematogenous basis
   A. Exanthems directly following vaccination
   B. "Postvaccinal exanthems" (scarlatiniform, morbiliform, multiform, papular, urticarial or purpuric) occurring at the time of pustulation
   C. True generalized vaccinia in the narrow sense; no previous cutaneous disease
3. Eruptions coincident with vaccination (pemphigus, scleroderma, dermatitis herpetiformis, other exanthems)
4. Eruptions due to mixed inoculation or infection of vaccination site (tuberculosis, syphilis, impetigo, erysipelas, etc.)

Spread of the vaccine in the lymphatics, which leads to the formation of lesions near the original site of vaccination, is not serious and leads only to increased scarring. Secondary accidental vaccination at distant sites on healthy skin is also not serious and is usually due to spreading of the virus through scratching. The process is essentially the same as eczema vaccinatum, the only important difference being the presence of diseased skin in the latter condition.

The following two cases, which I observed, well exemplify accidental vaccination:

CASE 2.—C. B., an unvaccinated girl aged 8 years, had never suffered from a cutaneous disease of any kind. During the two weeks preceding her illness several friends with whom she played were vaccinated. She suddenly exhibited vesicles on the left thigh and on the vulva and eyelids which followed the course of ordinary vaccination pustules. The temperature was 103 F., and enlargement of the cervical and inguinal lymph nodes was noted. The lesions healed with scarring in fourteen days. Staphylococci were cultured from the pustules.

CASE 3.—W. G., an unvaccinated boy aged 8 years, had always had a healthy skin. His younger brother, with whom he slept, had been vaccinated about ten days before the outbreak of the patient's eruption. The latter consisted of several delled pustules on the right cheek, eyelids, penis and scrotum. The inguinal nodes became swollen and tender. The lesions became crusted and healed in thirteen days. Staphylococci were cultured from the pustules.

Hayles [26] and Buckell [27] reported two interesting cases of accidental vaccination. Hayles' patient was a man who returned home after an absence and found that his child had been vaccinated. In anger he sucked the vaccination site; later a large vesicle developed on the inner surface of the upper lip. Buckell's patient kissed her vaccinated child shortly after she had run a fish bone into her tongue, and soon a vaccination pustule developed on the tongue.

26. Hayles, A. W.: Accidental Revaccination, Lancet **2**:174, 1904.
27. Buckell, W. R.: Vaccine Vesicle on the Tongue, Brit. M. J. **1**:1405, 1889.

Occasionally transitory erythematous or urticarial eruptions, the significance of which is not known, develop from two to four days after vaccination. The generalized true postvaccinal exanthems, which are rare, develop as a rule from seven to nine days after a first vaccination. These exanthems may be urticarial, papular, scarlatiniform, morbilliform, multiform or purpuric. In attempting to ascertain their pathogenesis as well as that of true generalized vaccinia and eczema vaccinatum it is necessary to consider the events which occur after vaccination.

That the variola virus is hematogenously disseminated is a fact which every one accepts and which has been proved repeatedly. As Paschen stated, however, it was generally believed for many years that the vaccine virus did not become generalized after cutaneous vaccination and that even after intravenous injection of vaccine it quickly disappeared from the circulation. In 1929 Gins, Hackenthal and Kamentzewa [28] isolated the vaccine virus from the tonsils of six children three days after cutaneous vaccination. They also found the virus in the upper respiratory passages of guinea-pigs and rabbits two days after cutaneous vaccination. Their studies made it seem probable that the appearance of the virus on the mucosae was an expression of generalization, especially in view of the fact that the virus could at the same time be demonstrated in the blood, liver and spleen.

Morawetz,[29] basing his conclusions on an extensive review of the pertinent literature and a wide personal experience with variola during the World War, stated that, besides the immunity of the cutaneous tissues, the formation of antivirulent products in the blood is a requisite to general immunity. Morawetz summarized various experimental works by stating that the serum of animals and of man after vaccination as well as after an attack of smallpox contains substances which kill or arrest the activity of the virus as observed in test tubes. The period of incubation preceding the appearance of these antivirulent products and the duration for which they remain vary with the type of animal rather than with the route of vaccination (cutaneous, subcutaneous, intravenous, etc.).

In his discussion of this question Paschen [25] cited the work of numerous investigators who showed that the vaccine virus in all probability reaches every organ in the body. Calmette and Guerin, Jurgens, Hartmann and Muhlens, Haaland, Ohly, Noble, Supfle and Paschen showed this generalization by positive results obtained after inoculating

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28. Gins, H. A.; Hackenthal, H., and Kamentzewa, N.: Neue Erfahrungen und Versuche über die Generalisierung des Vakzinevirus, Centralbl. f. Bakt. (Abt. 1) **110**:115 (Jan. 24) 1929.

29. Morawetz, Gustav: Klinische Studien zur Variola-Vaccineimmunität, Arch. f. Dermat. u. Syph. **142**:59, 1923.

the blood of rabbits which were vaccinated by various methods (corneally, subcutaneously, interperitoneally, etc.) into the skin of calves and rabbits. Paschen stated in conclusion, after weighing all evidence both for and against the theory, that the virus became generalized after vaccination, thus calling forth the production of virucidal substances.

As to the etiology of postvaccinal exanthems, Paschen [25] and Groth [30] expressed the belief that these eruptions are most likely due to a union of the virus and the virucidal substance formed by the body cells. Generalized vaccinia in the narrow sense is considered to be a diffuse vesicopustular exanthem appearing on a healthy skin after vaccination as a result of hematogenous dissemination of the virus, in which the individual lesions can be shown to contain the vaccine virus by positive results of corneal inoculation. As Paschen [25] stated, in generalized vaccinia one must assume either an insufficiency or a defect in the formation of antivirulent substances which permits the virus to get the upper hand, so to speak, and to multiply in the skin. This insufficiency or defect in formation was referred to as "a special predisposition" by Kaiser and Blass.[31] Eruptions strictly fitting the concept of true vaccinia are extremely rare. Anders [32] gave the following statistics:

Observer	No. of Vaccinations	Cases of Generalized Vaccinia
Chauveau	500,000 to 600,000	6-8
Haslund (1888-1898)	39,915	4
Haslund (1893-1897)	170,576	3
Vogt	100,000	5
Groth	2,285,579	50-60

However, Haslund [33] described the experience of a Belgian army physician, Froumy, who revaccinated one hundred and seventy-five cadets, none of whom had cutaneous disease and all of whom had been vaccinated successfully as children. The one hundred and seventy-five vaccinations produced sixty-four normal "takes," fifty-six mild "takes" and fifty-five negative results. Of the sixty-four cadets who exhibited normal "takes," twelve had typical vaccinia on the trunk, extremities and face. Four of the twelve had severe general symptoms, such as fever, angina, bronchitis, diarrhea and lesions on the mucosa.

30. Groth, cited by Paschen.[25]

31. Kaiser, M., and Blass, Gustav: Ein "pockenverdächtiger Fall" von Eczema vaccinatum mit folgender generalisierter Vaccine, Arch. f. Dermat. u. Syph. **164:** 357, 1931.

32. Anders: Ueber einen Fall von allgemeinen Kuhpocken (Vaccina generalisata) mit tödlichen Ausgange, Ztschr. f. Hyg. u. Infektionskr. **88:**116, 1919.

33. Haslund, cited by Anders.[32]

Drago's [34] case is illustrative of true vaccinia:

> In a child with a perfectly healthy skin a papular eruption developed ten days after first vaccination. The eruption, which was accompanied by high fever, soon became vesicopustular and involved the entire body, including the palms, soles and mucous membranes of the mouth and throat. Inoculation of the contents of the lesions into the cornea of a rabbit gave positive results.

Gins [35] stated that the question of generalized vaccinia became much easier to settle when it was considered that in the cases of true vaccinia there are two periods: (1) that of the primary insertion pustule and (2) a generalized exanthema occurring a few days later. In ordinary eczema vaccinatum the lesions develop simultaneously with the vaccination.

As to eczema vaccinatum, the majority of observers have favored the view that the lesions develop by successive auto-inoculations. Colcott Fox [36] expressed the belief that this is true in an overwhelming majority of cases. Paul, after studying the question thoroughly, expressed the belief that the term generalized vaccinia should not be used in reference to eczema vaccinatum since this is a purely local process. Ellis,[4] however, recently stated his opinion that eczema vaccinatum is essentially generalized vaccinia.

Experimental work leaves little doubt that the vaccine virus becomes generalized in every case of successful vaccination. This generalization, however, calls forth the production of virucidal substances which within a short time offset whatever damaging effects the virus might have if it were permitted to multiply unhampered throughout the body. In a broad sense, then, since the virus does not remain localized in the skin, even vaccination is a generalized process. On the other hand, in the narrow sense, cutaneous changes due to the vaccine virus should not be considered hematogenous unless the previously mentioned relative insufficiency or defect in the formation of this antivirulent substance is assumed. It appears that in most cases of eczema vaccinatum in which the disorder runs a favorable course and in which only a small area of the body surface is affected the condition is due solely to external inoculation of the virus. There are other points which favor this view, such as the fact that the involvement is only partial in universal eczema, the lack of lesions in the mouth and the appearance of the pustules in successive crops. Nevertheless, eczema vaccinatum which has spread externally can become almost generalized, especially in patients with extensive eczema.

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34. Drago, A.: Su di un raro caso di esantema vaccinole generalizzato, Pediatria **32**:1045 (Sept.) 1924.

35. Gins, cited by Paschen.[25]

36. Fox, cited by Paschen.[25]

Besides the cases in which the involvement seems purely external, there have been cases in eczematous persons in which lesions subsequently developed on entirely healthy skin and inside the mouth. Paschen [25] cited several cases illustrative of this type of involvement. It seems logical to assume that in these instances the virus becomes truly hematogenously distributed in the strict sense, as in generalized vaccinia occurring in patients with a normal skin. This view seems all the more reasonable when it is considered that the dose of virus entering the blood stream of eczematous patients must be tremendous in comparison to that absorbed in ordinary vaccination, since the diseased skin offers a favorable culture medium for growth of the organism. Such an excess of virus may cause a relative insufficiency of antivirulent substances and lead to generalized vaccinia.

The foregoing discussion applies to unvaccinated patients who become infected by the vaccine virus from another recently vaccinated person or from their own vaccination by the transference of the virus to the eczematous sites. In unvaccinated patients the prognosis of eczema vaccinatum is the graver the more widespread the eczema, since the infection acts as a vaccination with an extremely high dose of virus. Variations in the virulence of the virus is probably not an important factor since the vaccine virus used today, according to Schamberg and Kolmer,[37] is a variola virus which is permanently and irreversibly attenuated by many passages through calves. Paul [38] stated that the virulence of the virus is not of great importance in the production of eczema vaccinatum. Kaiser and Blass [31] maintained that in general the course of eczema vaccinatum shortly after first vaccinations is the milder the later the infection takes place.

The question then arises as to how eczematous patients who have been vaccinated react to later exposures to the vaccine virus. From his studies, Morawetz [29] concluded that general immunity and cutaneous immunity do not necessarily parallel one another, although little is actually known of their relationship. In purpuric smallpox, for example, there is a great formation of antitoxic products in the blood, yet the skin shows almost complete immunity. In other cases of variola the cutaneous symptoms may be severe (low cutaneous immunity), yet general symptoms may be completely lacking (high general immunity). Later vaccination in such cases can, according to Morawetz, produce an outspoken "take," indicating that the immunity components (skin and internal organs) are not dependant on one another. To prove this

37. Schamberg, J. F., and Kolmer, J. A.: Acute Infectious Diseases, Philadelphia, Lea & Febiger, 1928, p. 97.

38. Paul, Gustav: Studie über die Aetiologie und Pathogenese der sogenannten generalisierten Vaccine bei Individen mit vorher gesunder oder kranker Haut, Arch. f. Dermat. u. Syph. **52**:3, 1900.

point further Morawetz [29] cited a case (observed by Einer), that of a 4 year old boy who was repeatedly vaccinated cutaneously without success and later swallowed pasteurized crusts of cowpox, with resulting high fever, general symptoms and generalized vaccinia.

In reference to eczema vaccinatum in vaccinated persons, Althoff [39] observed an eczematous boy who was vaccinated successfully at the age of 12. Two years later he acquired eczema vaccinatum from a recently vaccinated nephew.

The case of Sprengel [40] and that of Lortat-Jacob and his co-workers [41] were similar to Althoff's case.

Busch [42] related the history of an eczematous boy who suffered from eczema vaccinatum at the age of 2 years. He recovered from this attack but two years later was again infected by his recently vaccinated sister; severe eczema vaccinatum developed, and the child died.

Busch expressed the belief that the diseased condition of certain skins (eczema) renders persons with such a condition protectionless against the virus so that it multiplies in the skin even in spite of general immunity. Busch felt that in his fatal case death was due to the absorption of toxic products from the skin. He expressed the belief that eczema vaccinatum did not lower the general immunity.

A satisfactory solution to the many problems in the immunologic study of eczema vaccinatum will require further observation and continued study. In cases such as that which Busch observed it seems logical enough to assume that the immunity of the skin may have been low or lacking, but it is more difficult to assume that the general immunity was high since the disease ran a severe course and the patient died. It seems more reasonable to believe that for some reason not understood both the cutaneous and the general immunity were not high enough, the cutaneous immunity perhaps having been lowered on account of the eczema, and the general immunity being insufficient to combat the large dose of virus entering the blood stream from the culture medium in the skin.

Anders [32] cited the case of a poorly nourished man aged 23 who was vaccinated in November 1917 and revaccinated (in spite of furuncles on the shoulder) in April 1918 during an epidemic of smallpox. Three

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39. Althoff, M.: Ein Fall generalisierter Vakzine nach spontaner Infektion, Med. Klin. **9**:275 (March 4) 1923.

40. Sprengel, H.: Ein Fall von Vakzineinfektion bei einen Ekzemkranken, Dermat. Wchnschr. **92**:645 (May 2) 1931.

41. Lortat-Jacob, L.; Legrain and Solente: Vaccine généralisée par inoculations multiples chez une malade atteinte de prurigo eczematisé, Bull. Soc. franç. de dermat. et syph. **30**:156, 1923.

42. Busch, N.: Ueber Eczema vaccinatum, Arch. f. Dermat. u. Syph. **167**:471 (Jan.) 1933.

days after the last vaccination he became ill; there developed a variola-like eruption on the body and lesions on the mouth, and the patient died. Autopsy showed vaccinia blisters in the trachea, bronchopneumonia, abscesses of the kidneys, orchitis and edema of the brain. Observations of this type show that the immunity acquired by vaccination is not always long enduring and may well vary in different persons, the variation depending on many factors, such as the state of nutrition or the presence of constitutional disease.

Since vaccination is an extremely common procedure and true generalized vaccinia is extremely rare, it must be assumed that even though the virus is present in the blood stream and inner organs, the balance between the virus and the virucidal substances is not frequently broken. Eczema, by lowering the immunity of the skin and affording a favorable soil for the multiplication of the virus, tends to upset this balance by causing more organisms to enter the circulation. The subsequent course then depends on the status of the general immunity, namely, on the ability of antivirulent substances to cope with an increased amount of the virus.

CONCLUSIONS

The names Kaposi's varicelliform eruption and pustulosis vacciniformis (varioliformis) acuta are synonymous.

The clinical features of Kaposi's varicelliform eruption, pustulosis vacciniformis (varioliformis) acuta and eczema vaccinatum are identical.

The failure to obtain a history of exposure to the vaccine virus has in most cases been the only reason for not identifying the former two conditions with eczema vaccinatum. In cases in which there is doubt as to the nature of the eruption the Paul test should be performed.

Experimental work has shown that the vaccine virus in all probability enters the circulation and is widely disseminated after cutaneous vaccination.

True generalized vaccinia represents a disturbance (following vaccination) of the balance between the virus and the virucidal substances which it calls forth in a person having an intact healthy skin, so that the virus which is disseminated hematogenously becomes active in the skin, producing a generalized vesicopustular eruption, lesions on the mucosae and general symptoms.

Eczema vaccinatum in most instances represents exogenous inoculation, even when the eruption is widely spread over the surface of the body.

Clinical Notes

EPITHELIOMA OF THE PALM DEVELOPING AT THE SITE OF A SYPHILITIC LESION

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Since the introduction of roentgen rays and radium epithelioma of the digits is not rare, but that of the palm is seldom met with, even less frequently than that of the sole. According to the statistics of Volkmann, von Brunn and Michael, which include 263 cases of epithelioma of the skin, in 19 cases the epithelioma affected the sole and in only 3 the palm.[1] The chief interest in the case here reported, however, centers on the fact that the cancer developed at the site of a syphilitic lesion.

REPORT OF A CASE

In May 1906 I treated a woman aged 35 for an indeterminate dry scaliness of the right palm, which was surmised to be a localized eczema or possibly a manifestation of psoriasis but which, as events subsequently showed, was a squamous syphilid. Treatment for eczema brought about improvement, but the palm remained rough, dry and somewhat indurated; the skin of the back of the hand also was dry and atrophic, looking like that of an old person. In fact, the patient's whole skin was dry and brittle not from ichthyosis but from faulty physiologic action. As far as general health was concerned there were pallor and anemia and at times yellow conjunctivae, and the patient suffered occasionally from neuralgia and herpes simplex. In fact, she was healthy enough for the ordinary daily routine but was never quite well.

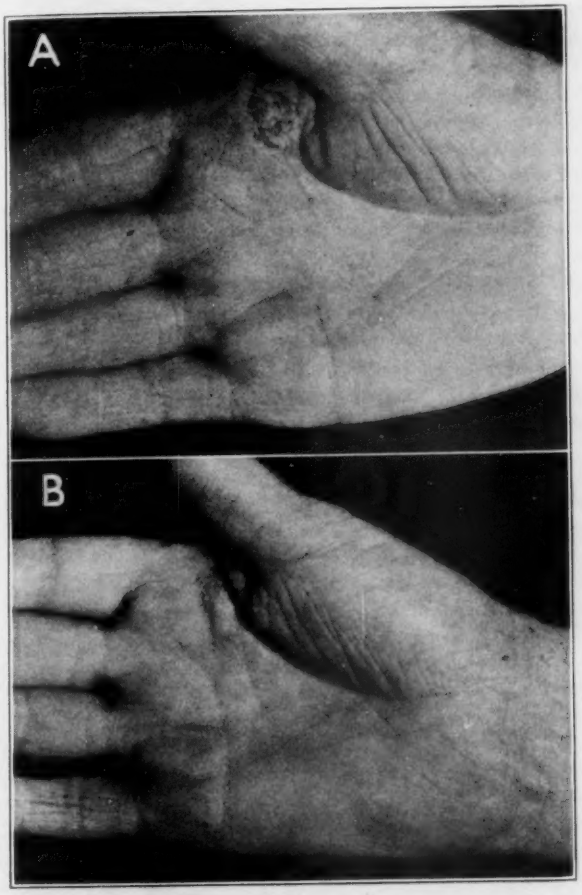
In the spring of 1915 she suffered from hemorrhoids and from eczema associated with intense pruritus of the genitalia. This quite accorded with the view I then held of the condition of the palm, which, although red, scaly and harsh to the touch, did not especially trouble the patient. In the fall of 1918, however, the right palm became heavily crusted, and on account of the unilaterality of the disorder a Wassermann test was made; it gave positive results. A marked improvement followed antisyphilitic treatment.

The patient returned about three years afterward, in June 1921, with an exceedingly painful ulcer on the right palm just anterior to the web of the thumb. This had appeared four months previously. The ulcer was covered by a heavy yellow crust. One of the lines of the palm cut through its center, giving it, when the hand was opened, a patulous look like the appearance of an open book. Because of the previous history it was not doubted that the involvement was syphilitic; the location alone almost precluded the idea of epithelioma. Mercury bichloride and potassium iodide were prescribed, and infusions of arsphenamine were administered.

This treatment was begun on July 7, 1921, and from the nature of the disease which was presumed to be the cause of the trouble as well as from the favorable reaction of the palm to a similar treatment nearly three years before a rapid

1. Kiess, O.: Hautkrankheiten der Handteller und Fussohlen, in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1930, vol. 14, pt. 1, p. 648.

resolution was expected. After five weeks, however, the ulcer was still present and was still covered by its adherent yellow crust. Persistent soaking with solution of boric acid made it possible to remove the crust, and a characteristic epithelioma was revealed. It was impossible, however, to define a rolled border because of the thickness of the surrounding palmar epithelium. The therapeutic indication was now clear, and 437 milligram hours of exposure to heavily screened radium was given.



A, epithelioma of the palm which when curetted proved to be unexpectedly deep; *B*, cicatrix resulting from the epithelioma.

It was noted at this time that a number of hard, mortar-like keratoses were present on the back of the hand.

By the end of October the lesion appeared to be perfectly healed. The treacherous nature of this form of epithelioma, which is practically always of the prickle cell variety, is well known. By the end of December the lesion was again active. At the suggestion of Dr. George D. Culver, who was then working with me, a still more vigorous irradiation was given, under which the lesion

again receded, but this time we were on the alert. We waited until we considered that the recession had reached its limit and then curetted the site thoroughly and cauterized the base with chromic acid crystals. Curetting revealed that what appeared to be a rather superficial lesion was a deep, narrow well. This was a sufficient demonstration of the inadvisability of relying entirely on the wavelets of radiant energy in dealing with cells as resistant as those of prickle cell cancer at the bottom of such a deep hole, surrounded by such a thick layer of horny tissue as is present on the palm. The radium rendered excellent service, however, in diminishing the field that needed to be curetted and cauterized. The wound healed normally, without any impairment of the function of the hand. For a short time there was some numbness along the index finger. The resultant scar was soft and pliable, and there was no recurrence of the epithelioma.

The variety of diagnoses is interesting. At first the patch was thought to be psoriasis. There were, however, no manifestations of this disease in its other favorite locations. Another diagnosis was eczema. Later the positive Wassermann reaction and the favorable action of arsphenamine led to a diagnosis of squamous syphilid, and finally an epithelioma developed in the diseased area.

ETIOLOGY OF CANCER OF THE PALM IN THE LIGHT OF THE PRESENT CASE

There are three clinical irritants—arsenic, tar and the actinic or chemical rays—which after prolonged exposure may lead to cancer. In showing how profoundly these may alter the nutrition of the cell Bloch has called attention to the fact that they are the ones that also especially cause pigmentation.

Of these, arsenic is the only carcinogenic substance which, when taken by mouth, can produce cancer.[3] But in order to produce the disease it must be ingested for a long time. It is interesting that in some cases it shows a decided selection for the epithelium of the palms and soles, causing keratosis which later degenerates into spinocellular cancer, usually of a very malignant type and inclined to metastasize. Curiously, when arsenic is given intravenously it is not carcinogenic. The patient whose case is reported did not receive arsenic for long periods or in large doses. While she was under my care the medication she received consisted mostly of mercury bichloride, potassium iodide and some infusions of arsphenamine. During the long intervals in which she did not report at the office she may have taken arsenic, but she showed no symptoms of a reaction due to that drug. Furthermore, the squamous condition, which at first I presumed to be eczema, occupied only a small portion of the vola of one hand, not the entire palmar and plantar surfaces as arsenical keratosis does.

The patient received infusions of arsphenamine, and this form of arsenic shows a special affinity for epithelium, as demonstrated by its rapidly clearing up syphilitic lesions of the skin and mucous membranes. Also it can cause an acute desquamative dermatitis which shows itself with special intensity on the palms and soles. No such effect was produced in this case. Moreover, arsphenamine is not given chronically, and no carcinogenic influence has ever been attributed to it.

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2. Footnote deleted by author.

3. (*a*) Kumer, L., and Lang, L. J.: Die bösartigen Geschwülste der Haut, in Arzt, Leopold and Zieler, Karl: Die Haut- und Geschlechtskrankheiten, Berlin, Urban & Schwarzenberg, 1935, vol. 2, p. 871. (*b*) Perutz, A.: Die Pharmakologie der Haut, in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1930, vol. 5, pt. 1, p. 196. Perutz quotes Aliferi, Leitch and Kennaway, Simões Raposo and K. Ullmann in this regard.

Arsenical cancer can occur as an occupational disease in leather and carpet workers and in miners, and some observers [4] believe that in many of the cases reported as instances of tar and aniline cancer the disorder is really arsenical cancer. The patient whose case is reported, however, was engaged in none of the occupations associated with the use of these substances; she was a housewife.

Goldsmith [5] stated that there is now ample proof that the external action of tar is carcinogenic. Bloch and Widmer succeeded in producing cancer in animals with distillates of tar that did not contain nitrogen, sulfur or arsenic, and Kenneway was similarly successful with synthetic tar (isoprene).

A coal tar preparation was used on the patient's palm for a long time, but its effect in inciting this cancer is doubtful.

Roentgen rays are also well known to be carcinogenic and are frequently employed in treating scaly conditions of the palm, but it was not known that this patient had received this form of treatment, and she certainly showed no evidences of radiation burn. Old age favors the occurrence of carcinoma, and, although not aged in years (she was only 50 when the cancer developed) the patient was so physically. Senility, however, cannot be said to be carcinogenic in the same sense as arsenic, tar and radiant energy, as its influence is passive—allowing the actively proliferating epithelial cells to infiltrate into the debilitated connective tissue. Syphilis also, by contributing to senility and weakening the resistance of the connective tissue, favors passively and incites the occurrence of cancer. The main carcinogenic influence in this case was undoubtedly the persistence for years of a desquamative disease due to syphilis.

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4. Kumer and Lang,[3a] p. 871.

5. Goldsmith, W. Noel: Recent Advances in Dermatology, Philadelphia, P. Blakiston's Son & Co., 1936, p. 411.

POMPHOLYX PRODUCED BY SENSITIVITY TO EPHEDRINE

CEDRIC C. CARPENTER, M.D., SUMMIT, N. J.

Various forms of dermatitis venenata and dermatitis medicamentosa caused by ephedrine have been recorded in the literature during the past seven years. In none have the manifestations observed in my cases been noted.

REPORT OF CASES

CASE 1.—A man aged 47 was referred to me in October 1932 complaining of swelling and itching of the hands and feet and of a concomitant dermatitis of the upper lip. These symptoms had appeared suddenly two days previously and had gradually increased in severity. For the past five days the patient had used an oily spray containing ephedrine to relieve the congestion of a cold in the head. His general health up to that time had been good except for the recurrence in the summer of a pompholyx affecting the hands and feet.

Examination revealed an acute vesicular dermatitis of the upper lip with swelling and erythema extending from the vermilion border into the nares. The palmar surfaces of both hands were swollen, and in their centers were closely grouped noninflammatory deep-seated vesicles. In addition, more superficial vesicles were scattered along the inner sides of the fingers. The plantar surfaces of both feet were similarly involved. The trunk was free from lesions. Inspection of the toes revealed no abnormal interdigital scaling suggesting an active epidermomycosis, and there was no apparent involvement of the toe-nails. A general physical examination showed an acute infection of the upper respiratory tract with an exacerbation of a chronic tonsillitis, as well as an acute cystitis and a pronounced pyorrhea alveolaris.

Laboratory Reports.—Microscopic searches for mycelia between the toes and in the vesicular lesions of the hands and feet gave consistently negative results, and only a moderate reaction was obtained to intradermal tests with a stock solution of trichophytin in a 1:20 dilution. The white blood cell count was 10,000, and the differential count showed 55 per cent neutrophils, 34 per cent lymphocytes, 7 per cent monocytes and 4 per cent eosinophils. All specimens of urine contained a large quantity of pus.

Results of Patch Tests.—Patch tests with the oily solution of ephedrine which the patient had been using and also with a 3 per cent aqueous solution were made on the volar surface of the forearm. Both substances produced strongly positive reactions in forty-eight hours with formation of itchy papulovesicular circumscribed eruptions.

Treatment and Progress.—The patient was cautioned against the further use of ephedrine, and soothing treatment for the nose and wet dressings for the hands were prescribed. Ten days later he returned to the office with an extension of the process on his face; the whole bearded region was covered with many oozing pustules and pustular crusts, and there was fissuring at the labial commissures. The eruption on the hands had disappeared, leaving only large dry desquamative scales in the center of the palms. The new eruption on the face was diagnosed as infectious eczematoid dermatitis of the Engman-Fordyce type. It rapidly

cleared with two subfractional doses of roentgen radiation and application of a 2 per cent ammoniated mercury ointment. After the cutaneous disorder healed all the patient's teeth were extracted and the chronically infected tonsils were removed. He has used no ephedrine since that time and for the past four years has had no further recurrence of the pompholyx.

CASE 2.—A man aged 50, a woolen-merchant, complained of an acute dermatitis of the nose and upper lip and of itching and swelling of the hands of two days' duration. This had developed suddenly four days after the patient had used a proprietary nasal jelly containing ephedrine for the treatment of a cold in the head. During the past five years I had taken care of this patient at intervals for furuncles and carbuncles. Occasionally he had attacks of typical tinea circinata of the legs; mycelia had been recovered, but the disorder had disappeared promptly under appropriate therapy. The patient had also previously been seen for a nonsymptomatic peeling of his hands which occurred at any time of the year and had been noted every year for the past twenty-five years.

The nose was swollen and edematous, and there was an acute eczematous eruption surrounding the nares and extending on the upper lip and contiguous portions of the cheeks. The palms of both hands and the sides of the fingers were covered with deep-seated pruritic vesicles, and on the forearms were many discrete reddish vesicular papules, which became more sparse the farther up the arm they extended. The plantar surfaces of the feet were involved in a similar but milder type of vesiculation than that which was present on the palms. No scaling was noted between the toes, although some onychogryposis was present in all the nails. A faint macular eruption could be distinguished on the chest and abdomen.

On physical examination mild obesity and questionably infected teeth were found.

Laboratory Examinations.—Smears from the nasal secretion contained only a few white blood cells, of which 50 per cent were eosinophils. Potassium hydroxide preparations of scales removed from the interdigital spaces of the toes, from the toe-nails and from the vesicles on the hands gave negative results for mycelia and yeastlike organisms. The chemical examination of the blood gave the following results: uric acid 3.6 mg., nonprotein nitrogen 34.3 mg., sugar 106 mg. and creatinine 1.5 mg. per hundred cubic centimeters. The hemoglobin content of the blood was 92 per cent; the red blood cells numbered 5,130,000, and the white blood cells, 7,600. The differential count showed 69 per cent polymorphonuclears, 24 per cent lymphocytes, 1 per cent monocytes and 6 per cent eosinophils.

The reaction to intradermal injection of 0.1 cc. of a 1:100 dilution of a vaccine of mixed trichophytin and oidiomycin was only the size of a 5 cent piece and produced no exacerbation to the localized pompholyx.

Results of Patch Tests.—A 3 per cent solution of ephedrine sulfate was applied on the V area of the neck for twenty-four hours. At the end of that time the area was intensely itchy, and a vesicular erythematous area had formed on the skin at that site.

Progress and Treatment.—The use of ephedrine was immediately stopped, and the hands and nose were treated with one-fourth unit of superficial roentgen therapy. Wet dressings of 2 per cent aluminum acetate were used constantly, and in forty-eight hours the intense itching had been relieved. Bland therapy with lotions was continued for a week; then a marked exfoliation of the hands took place, and the feet exfoliated to a lesser extent. A 6 per cent salicylic acid ointment was prescribed to hasten this peeling, which was complete in another week.

COMMENT

Scheer [1] first described a case of dermatitis venenata caused by ephedrine, and since that time approximately twenty-five other cases of sensitivity to this drug have been reported. Abramowitz and Noun [2] have completely reviewed all the cases reported up to 1933, and since that time only five or six others have been noted. In none of the cases previously reported was pompholyx a part of the syndrome. In my cases the deep noninflammatory sago-like vesicles of the palms and soles were so typical of a dermatophytid that it was surprising that no tinea could be recovered even after repeated searches. However, the presence of moderately positive reactions to trichophytin as well as the previous histories suggested that the eruptions might be classified as trichophytids, the production of which had been associated in some unknown manner with the sensitivity to ephedrine. On the other hand, von Kémeri's [3] theory of chronic irritation of the lymph channels by foci of infection cannot be disregarded in view of the acute purulent rhinitis and other chronic infections in both patients. Whether this pompholyx can be classed with the infectious eczematoid dermatitis as being due to streptococci or staphylococci is questionable. In case 1 the palmar and plantar vesicular eruption appeared long before the secondary pustular eruption on the face, which was at its height when the pompholyx was in its declining phase. Lastly, the disorder may be considered as another expression of reaction to ephedrine in sensitized persons.

Summit Medical Group.

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1. Scheer, M.: A Case of Dermatitis Venenata Due to Ephedrine, Arch. Dermat. & Syph. **20**:641 (Nov.) 1929.

2. Abramowitz, E. W., and Noun, H. M.: Brit. J. Dermat. **45**:225-237 (June) 1933.

3. von Kémeri, Dezsö: Die Aetiologie der Dyshidrose, Dermat. Wchnschr. **91**:1587-1591 (Oct.) 1930.

Minor Notes

TREATMENT OF VENOUS SPASM RESULTING FROM INJECTION OF MAPHARSEN OR ARSPHENAMINE

ARTHUR G. SCHOCH, M.D., DALLAS, TEXAS

Pain along the course of a vein due to venous spasm is sometimes observed during or immediately after the intravenous injection of mapharsen (particularly if it is administered slowly) or old arsphenamine. The pain at times lasts for more than a few minutes. I observed one case in which the pain lasted thirty-six hours but thrombosis did not result.

Cold wet applications bring immediate relief; hot wet applications intensify the pain. It suffices to apply a towel saturated with ice-water from the elbow to the shoulder along the anterior surface of the arm. Frequent changing of the towel is usually necessary for several minutes. The applications are continued until there is no return of the pain which, if the vein is still irritable, returns within a few seconds if the use of iced compresses is discontinued prematurely.

The application of iced compresses is rapidly effective. This method of treatment is in direct opposition to the application of hot wet compresses so commonly used to combat the pain following infiltration of the tissue with the arsphenamines. If promptly applied, iced compresses may prevent thrombosis of the vein in a certain percentage of patients whose veins are sufficiently irritable to undergo spasm as a result of intravenous injection of mapharsen or arsphenamines.

Valedictory

It is the general opinion that by 65 a man should think of retiring and not resist too long his inclination to do it. With that in mind and with the feeling that if I have not already overstayed my time as Editor of the ARCHIVES, I have at least reached the age at which there is danger of establishing a bad precedent by holding on, I asked the Trustees of the American Medical Association in May to accept my resignation as Editor in Chief. I suggested that the acceptance be made as of December 31, in order that the new Editor might take up his work at the beginning of a new volume.

On September 24 the resignation was accepted and my official relation with the ARCHIVES ends with this issue.

My resignation means a severing of a relation that has been one of my prime interests. But I do not find myself enjoying any sweet melancholy over it. On the contrary, the relation has been so agreeable that I feel that it would be ungrateful not to be altogether cheerful in looking back on so interesting and happy an experience.

In the fifteen years that I have been editor, the journal has grown greatly, and I have received much credit for this. Whatever credit I am entitled to is due to the fact that I have pursued a plain middle of the road course in trying to encourage dermatologists and to develop dermatology. The real credit is due to the Trustees of the American Medical Association and to the dermatologists of the country.

The Trustees have given me a free hand. There have been no restraining influences and no restrictions. They have been willing to face without complaint a considerable deficit each year, basing their willingness purely on the far-sighted policy that the expenditures were justified by the benefit that medicine in general derives from fostering its specialties.

The part that dermatologists have played in improving the ARCHIVES lies in the contributions they have been making. Dermatology is prospering prodigiously in this country. There is a fine group of men who are well trained, enthusiastic, industrious and well situated for work, and they are furnishing the ARCHIVES with a constant stream of worthwhile contributions with which to fill its pages.

These are the two facts that have made the ARCHIVES great.

So far as I can see, the future of the ARCHIVES is altogether bright. Members of the generation that is passing out can, I believe, throw the torch to the present, younger, generation of dermatologists with assurance that it will be carried high.

The Trustees of the Association have selected Dr. Howard Fox as Editor in Chief. No one can have any anxiety about the future of the ARCHIVES under his direction.

WILLIAM ALLEN PUSEY, M.D., Chicago.

News and Comment

THE AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

The written examination for applicants of group B will be held in various cities throughout the country on April 17, 1937. Oral examination for applications of group A and B will be held in Philadelphia, on June 7 and 8, 1937. Applications for examination may be addressed to the secretary of the board, Dr. C. Guy Lane, 416 Marlborough St., Boston.

An application blank and a booklet of information may be obtained from the secretary.

CORPUS ICONUM MORBORUM CUTANEORUM

The editors of "Corpus Iconum Morborum Cutaneorum" announce that the editing of the enormous material—now over 4,000 photographs, aquarelles, autochromes and moulages—that has been offered for reproduction will require more time than was expected. The work can hardly be completed before April 1937, when the borrowed objects will be returned to their owners.

The atlas will most likely contain more than 1,500 illustrations. Contrary to the original plan, which was to publish the records of all cases in Latin, it has been decided to leave it to each author to choose whether his case shall be described in English, French, German or Italian.

The work will appear probably in August 1937.

Abstracts from Current Literature

EDITED BY DR. HERBERT RATTNER

ABSORPTION OF CAROTENE. WALTER HEYMANN, Am. J. Dis. Child. **51**:273 (Feb.) 1936.

Heymann states that the skin of certain children who have received large doses of carotene over comparatively long periods shows a definite tendency to lose its yellowish tinge even though the administration of carotene is continued. This decoloration is accompanied by a corresponding drop in the level of carotene in the serum. These results must ultimately depend either on an increased rate of destruction of carotene already present in the tissues or on a diminished rate of intestinal absorption. The studies here presented, made on five subjects whose skin showed great decoloration, prove that, just as in normal children, fully 70 per cent of the ingested carotene was absorbed from the intestinal tract. This fact points directly to an increased destruction of carotene within the body tissues, most likely in the liver—a result that is consistent with the data presented, which failed to locate the source of destruction in the serum.

The author also found that there was a marked diminution in the rate of intestinal absorption of carotene in infants suffering from infections, the average absorption being about 35 per cent (normal rate of absorption, 70 per cent). Heymann states that this diminished absorption in children with infections is not due to the fever but to a toxic factor.

HAIR PLUCKING. ADRIAN BLEYER, Am. J. Dis. Child. **51**:336 (Feb.) 1936.

Under this title the author reports three cases of trichotillomania, all occurring in boys under 3 years of age.

XANTHOMATOSIS AND THE SYNDROME OF DIABETIC EXOPHTHALMIC DYSOSTOSIS. S. BERNARD WORTIS, ABNER WOLF and CORNELIUS G. DYKE, Am. J. Dis. Child. **51**:353 (Feb.) 1936.

The authors report three cases of the Hand-Schüller-Christian syndrome, which is characterized by exophthalmos, diabetes insipidus and changes in the bones, particularly in the skull. The cutaneous changes, characterized by the development of yellowish tumor masses, occurring particularly about the scalp, should be considered as an essential part of the picture.

To date approximately sixty cases of this syndrome have been reported in the literature. The bony lesions respond quite well to roentgen therapy.

DEATH FROM HEMORRHAGIC ENCEPHALITIS FOLLOWING TREATMENT WITH SULFARSPHENAMINE: REPORT OF TWO CASES IN SYPHILITIC INFANTS. WILLIAM C. BLACK, Am. J. Dis. Child. **51**:609 (March) 1936.

Black reports two cases of hemorrhagic encephalitis in syphilitic infants who were receiving sulfarsphenamine. According to the author these two cases are the first to be described in infants. In both instances the diagnosis was confirmed by autopsy. Between sixty and seventy-five cases clinically and pathologically authenticated have been reported. NELSON PAUL ANDERSON, Los Angeles.

SYPHILITIC PSEUDOBULBAR PALSY WITH COMPULSIVE WEEPING. L. J. KARNOSH and W. H. CONNOR, Am. J. Syph., Gonor. & Ven. Dis. **20**:115 (March) 1936.

Karnosh and Connor report two cases of compulsive or pathologic weeping resulting from syphilis of the central nervous system. The first case was one of

cerebrospinal syphilis with mild paralysis affecting both sides and signs of mild pseudobulbar palsy. The second case was one of an early stage of dementia paralytica complicated by cerebral thrombosis, resulting in aphasia, bulbar weakness and hemiplegia.

Compulsive weeping may be a transitory phenomenon escaping detection, and in many cases of syphilis of the central nervous system it may be loosely regarded as being merely a manifestation of the emotional derangement occurring in association with dementia paralytica. However, it occurs in its purest form in cases of syphilis of the central nervous system in which no symptoms of dementia paralytica are present, and therefore the syphilologist may encounter it more frequently than the neurologist. Its appearance should always be suspected in cases of mild paralysis affecting both sides or in situations in which a unilateral cerebral accident leads to severe bulbar weakness.

The anatomic and psychologic features of this phenomenon are discussed.

THE DIRECT COST OF SYPHILIS IN A REPRESENTATIVE AMERICAN CITY. N. C. THOMPSON, W. A. BRUMFIELD and L. CALDWELL, Am. J. Syph., Gonor. & Ven. Dis. **20**:243 (May) 1936.

The authors state that in Baltimore, among the 828,000 inhabitants about 9,000 new syphilitic patients are discovered yearly. Of the 9,000, about 4,000 have early and 5,000 have late stages of syphilis.

The estimated cost of adequate treatment of ambulatory patients with syphilis is $25,000 per thousand patients treated. The total direct cost of syphilis to the city of Baltimore during 1933 was (roughly) $170,000. Indirect costs of syphilis to the community are listed but not estimated. In direct costs alone each new syphilitic patient imposes on the community an expenditure of about $18 per year.

THE INTRAVENOUS USE OF ACETARSONE IN CONGENITAL SYPHILIS. T. B. GIVAN and G. VILLA, Am. J. Syph., Gonor. & Ven. Dis. **20**:275 (May) 1936.

Thirty children with congenital syphilis were given a total of 463 intravenous injections of acetarsone. The average dose was 0.514 Gm. No untoward reactions occurred which required treatment or discontinuance of the medication. There was an improvement in the general condition of every patient, associated with an increase in weight and height. Improvement of active syphilitic lesions occurred in every case in which such lesions were present. The Wassermann and Kahn tests were favorably influenced by the medication in the majority of cases.

REUTER, Milwaukee.

ALLERGY: A REVIEW OF THE LITERATURE OF 1935. F. M. RACKEMANN, Arch. Int. Med. **57**:184 (Jan.) 1936.

Rackemann reviews the current literature up to January 1935.

All the articles dealing with allergy in its various forms are commented on. The articles dealing with cutaneous allergy have been previously abstracted in the ARCHIVES.

JAMIESON, Detroit.

ULTRASHORT WAVE THERAPY. W. H. SCHMIDT, Arch. Phys. Therapy **17**:231 (April) 1936.

Ultrashort wave therapy utilizes wavelengths of less than 10 meters, in contrast with the wavelengths of from 200 to 300 meters used in ordinary diathermy. The electrodes must be separated from the skin by from ½ to 1 inch (from 1.3 to 2.5 cm.) of air or felt. There is no flow of current as in the sense of diathermy, but the tissues between the electrodes are heated, owing to their inability to undergo the rapid change of direction and intensity of the electric charge.

Schmidt states that short wave therapy is most effective in the treatment of acute infections, prompt relief of pain being a striking feature in nearly every case. It is indicated in treatment of carbuncles, furuncles, infected injuries and the common acute infections of the fingers.

LYNCH, St. Paul.

HYPERSENSITIVENESS TO PITUITARY EXTRACTS. FRANK A. SIMON and C. F. RYDER, J. A. M. A. **106**:512 (Feb. 15) 1936.

The authors report five cases of hypersensitiveness to pituitary extract, in three of which there was no history of previous allergic disease in either the patient or the family. The five patients were multiparous women who either definitely or presumably had previously received injections of pituitary preparations. The types of reactions to the routine use of the medication in these patients included angioneurotic edema, urticaria, dyspnea, nausea, vomiting and local swelling at the site of the injection. Cutaneous tests with various pituitary extracts gave positive reactions in each patient except when extract from the posterior portion of the pituitary gland was omitted from the test material. Pituitary extracts made from cattle, hogs, dogs and human sources likewise gave positive results, while extracts made from other glands and tissues elicited no reactions. The cutaneous tests made on the babies gave negative results. Local passive transfer was successful in two instances. No evidence of sensitization to pituitary extract could be established in any of the controls. The exciting agent in the posterior pituitary extract was neither the vasopressor nor the oxytocic principle.

THE FREI TEST FOR LYMPHOGRANULOMA INGUINALE: EXPERIENCES WITH ANTIGENS MADE FROM MOUSE BRAIN. MAURICE J. STRAUSS and MARION E. HOWARD, J. A. M. A. **106**:517 (Feb. 15) 1936.

A comparison was made between the ordinary Frei antigen (made from infected glands of patients known to have lymphogranuloma inguinale) and antigens made from both normal mouse brain and mouse brain infected with virus of lymphogranuloma inguinale. Strauss and Howard found from the results of tests that patients with lymphogranuloma inguinale reacted to mouse brain infected with lymphogranuloma inguinale in approximately the same degree as to ordinary Frei antigen. Normal subjects, however, also reacted to the injected brain tissue but showed negative reaction to the ordinary Frei antigen. The authors also found that normal mouse brain, particularly when it had been stored for at least a month, was capable of eliciting comparable reactions in normal subjects who had never had lymphogranuloma inguinale. They express the belief that Frei antigen made from mouse brain is not suitable for the routine diagnosis of lymphogranuloma inguinale.

THE TRAINING OF INTERNS IN SYPHILOLOGY IN HOSPITALS APPROVED FOR INTERNSHIPS. WALTER CLARKE and MAX J. EXNER, J. A. M. A. **106**:767 (March 7) 1936.

A questionnaire in regard to the training of interns in syphilology was sent to hospitals approved for internships. Of the 594 hospitals in forty-two states from which answers were received, 331 had an outpatient service; in 314 of these a syphilis service was available to interns, and in 17 it was not. Of the 314 hospitals that made the syphilis service available, 243 required the service of interns in that department and 70 made the service optional. One hospital did not answer this question. There was a large variation in the time required of the interns in the various institutions. The average standard of requirements in the 243 hospitals was ten weeks on the syphilis service for a little less than six hours per week, or for a total of about sixty hours. Clarke and Exner express the belief that the training of interns in syphilology constitutes a vital factor in the control of syphilis. For this reason they stress the necessity for a revision of policy in the institutions in which the assignment of interns to syphilis clinics is either entirely neglected or is below the average standard of requirements.

TOXICITY OF CARBARSONE. ERVIN EPSTEIN, J. A. M. A. **106**:769 (March 7) 1936.

Carbarsone is closely related chemically to tryparsamide and acetarsone. It is probably less toxic than either of these two drugs. While serious reactions or

deaths following the use of carbarsone have been thought possible, Epstein's case is the first fatality on record. The patient was a woman, aged 55, who was in poor physical condition before the medication was administered. Some of the reactions which developed after injections of carbarsone simulated toxicity due to tryparsamide, the symptoms consisting of dermatitis, jaundice, hepatitis and slight irritation of abnormal kidneys. Reactions similar to the typical reactions due to acetarsone were malaise, headache, fever, edema, albuminuria, jaundice, eosinophilia; leukopenia and exfoliative dermatitis. While carbarsone is probably less toxic than the other related preparations, the same care must be taken in its administration, and constant watch must be maintained for signs of intolerance.

RECURRENCE OF INOCULATION MALARIA. MAGNUS C. PETERSEN, J. A. M. A. **106**:775 (March 7) 1936.

In a total of 261 patients inoculated with malaria, 14 recidivations were encountered. Four apparently unrelated strains of organisms were involved in this series of recurrences. Reinfection was ruled out as a possibility. There was a suggested periodicity in the recurrences. The period between the malarial treatment and the recidivation in 1 case was thirty weeks, and in 5 cases it was a multiple of from twenty-nine to thirty-one weeks. A similar time relation was noted in several cases of suspected recurrences. Petersen, because of these observations, expresses the opinion that malaria produced by inoculation does not differ from that transmitted by the mosquito. He believes that a systematic search for the plasmodium in patients treated with malaria who have fever from any cause will reveal a number of unsuspected recurrences. The possibility that recidivations from malaria produced by inoculation may be a factor in the spread of the disease deserves serious consideration.

EXPERIMENTAL THERAPY IN COCCIDIOIDAL GRANULOMA. HAROLD C. SOX and ERNEST C. DICKSON, J. A. M. A. **106**:777 (March 7) 1936.

Sox and Dickson evaluated by means of experiments with animals the various types of medicinal therapy suggested for the treatment of coccidioidal granuloma. Guinea-pigs were given the selected therapeutic agent for from six to ten days before inoculation. A suspension of a virulent strain of Coccidioides was then inoculated into the testicle, and the treatment was continued daily therafter. Of the eleven drugs and one vaccine tested, only thymol was found to give any definitely favorable results. The dose which appears to be well tolerated by patients is 6 Gm. daily. The local and systemic application of thymol in human cases of coccidioidal granuloma was followed by encouraging results, and further application and study of the treatment of this disease with thymol is indicated.

PERIARTERITIS NODOSA. LYLE MOTLEY, J. A. M. A. **106**:898 (March 14) 1936.

Motley points out that periarteritis nodosa may affect any part of the body and, because of the variety of its manifestations, is seldom diagnosed during life. Cutaneous lesions not infrequently occur, taking the form of subcutaneous hemorrhages, urticaria and, in particular, purpura resembling Schönlein's disease. The appearance of erythema nodosum may be simulated. In one of the cases which Motley reports there was a well marked edema of both ankles, and purpuric-like lesions were present on the legs. On the outer aspect of the left ankle there was a deep ecchymotic lesion extending into the subcutaneous tissue. Several other small nodules were present beneath the skin of the left leg and upper extremities. Several white blood cell counts showed an average of 25,000 leukocytes; the differential count revealed 66 per cent eosinophils. Histologic examination showed intense inflammatory cellular infiltration of the adventitia extending through the media and involving the intima, obliterating the lumen. The cellular infiltration extended well beyond the artery out into the perivascular tissue, producing a definite nodule. These cells consisted for the most part of polymorpho-

nuclear leukocytes with many eosinophils and some round cells. Treatment consisted of general physiologic measures, repeated blood transfusions, administration of small doses of neoarsphenamine and a high vitamin diet. Although complications ensued, the outcome was favorable. In the second case reported by Motley the patient showed edema of the ankles and red nodules in the skin as well as other evidences of the disease. Treatment consisting of roentgen radiation and neoarsphenamine had just been started; apparently the patient was slowly recovering.

LYMPHOGRANULOMA INGUINALE: ITS INCIDENCE IN ST. LOUIS. S. H. GRAY, GEORGE A. HUNT, PAUL WHEELER and J. OWEN BLACHE, J. A. M. A. **106**: 919 (March 14) 1936.

As a result of 790 Frei tests on white and Negro patients, the incidence of lymphogranuloma inguinale was found to be 3.4 per cent in the white and 40 per cent in the Negro patients. Of 264 Negro patients in the medical wards, 98 had a positive reaction to the Frei antigen. The majority of these patients stated that they had no previous active lesions, and in no instance was there any evidence of the disease. Therefore Gray, Hunt, Wheeler and Blache are of the opinion that lymphogranuloma inguinale may be present in a mild form with little or no lymphatic involvement. For this reason it is important to exercise care in interpreting a clinical picture when the patient has a positive reaction to the Frei test.

TRANSMISSION OF SYPHILIS BY BLOOD TRANSFUSION: A CASE OF ACUTE GUMMATOUS OSTEOMYELITIS. HARRY MANDELBAUM and ABRAHAM N. SAPERSTEIN, J. A. M. A. **106**:1061 (March 28) 1936.

Mandelbaum and Saperstein report the case of a woman, aged 29, who was given a blood transfusion during labor, twins being delivered by cesarean section a few hours later. Her brother acted as the donor. Eight weeks later painful swellings began to develop over the sternum and on various parts of the skull. The diagnosis was acute gummatous osteomyelitis. The infection was traced to the donor who stated that he had been exposed to syphilis. His Wassermann reaction was strongly and repeatedly positive, but he did not exhibit any clinical evidence of the disease. Of interest was the development of the bony lesions without any previous lesions of the skin or mucous membrane and without constitutional symptoms. The patient's husband and the twins, delivered a few hours after the blood transfusion was given, were free from syphilis.

THE GORDON TEST FOR HODGKIN'S DISEASE. D. H. ROSENBERG and LEON BLOCH, J. A. M. A. **106**:1156 (April 4) 1936.

Rosenberg and Bloch report on their experience with Gordon's test for the diagnosis of Hodgkin's disease. This test consists of injecting into rabbits' brains a sterile emulsion of a suspected lymph node. When the test is positive the rabbit, after several days, exhibits neurologic symptoms, and usually death occurs. In two instances of early stages of Hodgkin's disease the test was positive; in a chronic case of one year's duration, it was negative. Three normal lymph nodes used as controls gave negative results. It was found in reviewing the literature that the test was positive in nearly 80 per cent of cases of Hodgkin's disease but in only 3 per cent of control cases. Full and final evaluation of the test has not yet been made.

THE TREATMENT OF EARLY SYPHILIS. O. S. ORMSBY, J. A. M. A. **106**:1241 (April 11) 1936.

Ormsby reviews his experiences in the treatment of syphilis from the time before arsphenamine was used to the present and shows that the logical treatment of early syphilis is the continuous regimen. He advocates alternating treatment with a bismuth preparation and neoarsphenamine and states that a mini-

mum of twenty injections of the arsenical should be given. Treatment should last at least eighteen months. With such a scheme, syphilis in its early stages may be eradicated in the majority of instances. The early reversal of the Wassermann reaction indicates favorable progress, but it should not induce the physician to reduce the number of treatments.

LEWIS, New York.

A HITHERTO (?) UNDESCRIBED SOURCE OF DERMATITIS VENENATA [TEAR GAS]. CHARLES J. WHITE, New England J. Med. **214**:270 (Feb. 6) 1936.

White reports a case of recurrent dermatitis in which the eruption appeared on the lower portion of the chest and upper portion of the abdomen as red dry scaling areas about 6 by 5 inches (15 by 12.5 cm.). It was suggested to the patient that the cause was probably external. He then suspected it to be the cartridge of a gas-gun in the form of a fountain pen which was carried in the pocket of the waistcoat. The location of the pockets fitted precisely over two involved areas on the torso. Subsequent information from the patient stated that the tear gas was probably chloro-acetophenone.

APPEL, Boston.

THE IMPORTANCE OF OVERLAPPING IN IRRADIATION OF THE SCALP, WITH COMMENTS ON THE TOLERANCE OF THE SKIN FOR SOFT RAYS. STEPHAN EPSTEIN, Brit. J. Dermat. **48**:1 (Jan.) 1936.

Epstein confirms the findings of Molesworth and Riddle. He actually measured by ionization methods, the amount of roentgen rays that reaches the scalp in ordinary epilation by irradiation. Owing to overlapping there is an increase of from 50 to 80 per cent of the dose at the centers of irradiation as well as at intermediary points over that applied to each center of irradiation.

He also cites the case of a child who received to one area of the scalp twice the epilating dose (540 roentgens) of roentgen rays without suffering permanent alopecia.

The technic of scalp epilation used at the dermatologic clinic of the University of Breslau, Germany, is described.

Epstein states that the sensitivity of the skin is the same for soft as for hard rays.

[From these findings it is obvious that practically all points of the scalp receive a dose of approximately 500 roentgens. The question arises: Will 300 roentgens, which is the epilating dose, applied to a single area of the scalp of a child of 8 years cause defluvium in that area?

The skin reacts differently to roentgen rays of different wavelengths. If two adjacent areas of skin each measuring 1 square inch (6.5 sq. cm.) are treated with 300 roentgens, one area being treated with 100 kilovolts and the other with 150 kilovolts filtered with 3 mm. of aluminum, erythema will appear within ten days in the area treated with unfiltered rays, but no erythema will appear in the area treated with hard rays. Abstractor.]

CIPOLLARO, New York.

STAPHYLOCOCCAL INFECTIONS OF THE SKIN AND THEIR TREATMENT. J. IVAN CONNOR, Brit. M. J. **2**:1195 (Dec. 21) 1935.

According to Connor, conditions predisposing to staphylococcic infections of the skin are seborrhea, pityriasis, acne, low resistance to infection, sinusitis, rhinitis and nasopharyngeal catarrh. Sycosis barbae is seen only in persons with seborrhea. A new method of treatment was suggested by the observation that blood serum contains a measurable amount of antitoxin. The treatment consists of graded injections of a toxoid prepared by incubating the exotoxin of staphylococci, adding a small amount of dilute solution of formaldehyde and incubating the mixture for several days. This treatment increases the amount of circulating antitoxin in man and in animals up to twenty times the original titer and is accompanied by establishment of immunity to infection in animals and by clinical improvement in man "in a fair percentage of cases." Recurrent furunculosis was cured after

eight injections; sycosis barbae required longer treatment, twelve of twenty-three patients being cured and the remainder much improved. The least number of injections required to effect a cure was eight, and the highest, twenty. Other disorders cured were boils, pustules on the face and carbuncles. Tables show the increase of antihemolytic titer in the blood of subjects having received the treatment.

Occupational Disease of Sponge Fishers. Skevos Zervos, Brit. M. J. **2**:1263 (Dec. 28) 1935.

This review describes briefly a new disease discovered among the inhabitants of the Greek islands who make their living by fishing for sponges in the waters of the Archipelago.

The disease develops as the result of the sting of a sea anemone belonging to the genus Actinium, which is attached to the sponges found by divers at the bottom of the Aegean Sea. The disease begins with intense itching and burning, which at first are localized to the site of the bite and later extend rapidly until the entire body is involved. There may also be rigors, vomiting, headache and high fever. Subsequently the original spot sloughs off, leaving a slowly healing, deep ulcer.

Treatment is largely preventive and consists of dry-cupping the site stung, this measure being sometimes reenforced by free incision and application of antiseptic compresses.

Appel, Boston.

Specific Infectiousness of Syphilitic Ganglions. A. Bessemans, J. Van Hée and J. Van Haelst, Ann. Inst. Pasteur **54**:282, 1935.

Inoculation of rabbits, guinea-pigs and mice did not enable the authors to demonstrate any infectiousness of inguinal nodes from eight patients with dementia paralytica. Various cutaneous inoculations in attempts to activate the nodes resulted in failure. Superinfection by cutaneous scarification, regardless of the strain of spirochetes, induced no specific reaction. It was, moreover, impossible to repeat the work of Prigge and Rutkowski, according to whom the virus of superinfection did infect the site of inoculation and the adjacent nodes.

From the Authors' Conclusions. [Arch. Path.]

Characteristics of the Capillary Loops of the Papillae of the Skin in the New-Born. G. Salvioli, Riv. di clin. pediat. **33**:1093 (Oct.) 1935.

Salvioli presents photomicrographs of the capillary loops seen through the nail of the new-born. These loops are already formed at birth, both in the child at term and in the premature infant. There are two types of loops, the long type and the short type. With development the capillaries seem to increase in number rather than in size.

Higgins, Boston. [Am. J. Dis. Child.]

Skin Capillary Reaction in Infants. T. Tagawa, J. Pediat. (Tokyo), no. 422, July 20, 1935, p. 975.

An ice cube, the flat surface of which measured about 9 sq. cm., was applied over the cubital area of the forearm for three seconds, and the time which was required for the skin to regain its normal color was measured. The author found that there was a noticeable constitutional difference in the reactivity of various infants to the application of cold and that it was definitely related to susceptibility to infections of the upper respiratory tract, body weight, nutritional state and color of the skin.

Kato, Chicago. [Am. J. Dis. Child.]

CLINICAL AND STATISTICAL STUDIES OF IMPETIGO ALBOSTAPHYLOGENES (DOHI). H. ASANO, Jap. J. Dermat. & Urol. **38**:271 (Aug.) 1935.

Asano made a study of 165 cases of impetigo "albostaphylogenes (Dohi)"; she found that the condition is rare before the fourth month of life and that after the second year it is less frequent, becoming extremely rare after the sixth year.

Histologic examination of the lesion discloses the line of separation of the vesicle to be in the granular or in the malpighian layer, though the epithelial pegs were never either edematous or elongated. The content of the vesicle consisted of fibrin, moderate numbers of polymorphonuclear leukocytes and, rarely, mononuclears and swollen epithelial cells. A moderate amount of dilatation of the vessels and a mild perivascular infiltration were present, the cellular constituents corresponding to those of the aforementioned vesicular content. Bacteriologically, the staphylococcus was present mostly within the leukocytes or in the vesicular fluid. During the course of one case the coincidental appearance of an eruption of measles produced a condition resembling ecthyma gangraenosum. Photographs of microscopic sections and of lesions accompany the article.

TREATMENT OF SYPHILIS BY MEANS OF INTRAVENOUS INJECTIONS OF ARSPHENAMINE. T. HANAOKA, Jap. J. Dermat. & Urol. **38**:606 (Oct.) 1935.

Hanaoka has already reported (*Jap. J. Dermat. & Urol.* **33**:105 [June] 1933) on the treatment of syphilis with intramuscular administration of arsphenamine, and he now reports on the intravenous use of the drug. The preparation was given in doses of from 0.3 to 0.4 Gm. every two weeks, the total course consisting of three doses. Each dose was diluted in from 200 to 250 cc. of a 0.4 per cent saline solution. Results were satisfactory, and the incidence and character of the unpleasant side effects were not greatly different from those associated with administration of neoarsphenamine.

A CASE OF CALCIFIED EPITHELIOMA WITH SO-CALLED BOTRYOMYCOSIS. J. YAMAZAKI, Jap. J. Dermat. & Urol. **38**:982 (Dec.) 1935.

Yamazaki reports the occurrence in a woman, aged 34, of a calcified epithelioma, namely, a small roundish tumor composed of nests and strands of what appeared to be epithelial cells, surrounded by a capsule and septums of thick connective tissue, bearing on its apex a pedunculated granuloma (botryomycosis). He tentatively regards the latter as being due to improper treatment of the basic new growth (epithelioma) with caustic preparations. The patient first noted the tumor fifteen years before. The areas of calcification within the epithelial nests are ascribed to poor circulatory supply and probably disturbed tissue metabolism resulting in an abnormal state of the tissues or formation of substances favoring deposition of calcium.

Isolated cells or groups of cells showed brownish pigmentation, and this pigment reacted positively to the berlin blue test for iron.

THE INFLUENCE OF ECZEMATOUS CHANGES IN THE SKIN ON THE THYROID GLAND: I. FUNCTIONAL TESTING OF THE THYROID GLAND BY MEANS OF THE KOTTMANN REACTION. T. OZAKI, Jap. J. Dermat. & Urol. **39**:1 (Jan.) 1936.

After the limits of physiologic variation had been established, dermatitis due to croton oil was produced in ten healthy rabbits by the usual technic. The Kottmann reaction was usually accelerated in the acute and subacute phases of the dermatitis and returned to normal or even to a delayed reaction when convalescence occurred. When the rabbits had been previously thyroidectomized, the dermatitis did not exert much effect on the Kottmann reaction; however, when the thyroid gland was excited to increased functioning by injections of a proprietary preparation of thyroglobulin, the reaction was promptly and markedly accelerated by the dermatitis, the acceleration being even more marked than in the healthy, untreated rabbits. Ozaki expresses the belief that these results indi-

cate not only that the Kottmann reaction is a test of thyroid function but that thyroid function is influenced by artificial dermatitis (eczematous changes in the skin).

TWO INTERESTING CASES OF ERYTHEMA NODOSUM. D. MORIYAMA and M. HANAZONO, Jap. J. Dermat. & Urol. **39**:56 (Jan.) 1936.

Two young nurses who suffered typical attacks of erythema nodosum consisting of an eruption of nodose, erythematous lesions on the lower portion of the legs, fever, headache and pains in and swelling of the knee joints associated with tonsillitis showed roentgenologic evidence of latent pulmonary tuberculosis. However, in both patients removal of the tonsils or recovery from the tonsillitis roughly coincided with recovery from the cutaneous disorder, and the pulmonary findings did not show any evidence of activity either during the attack of erythema nodosum or after a year of arduous work in the hospital. The authors are inclined to believe that the cause of the dermatosis was not tuberculous but rather akin to the miasmatic still undetermined cause of acute articular rheumatism.

J. W. BRENNER, Chicago.

EXPERIMENTS ON THE INVASION OF SPIROCHAETA PALLIDA THROUGH THE SKIN OF MICE. HOJI KO, Lues: Bull. Soc. japon. de syph. **7**:177 (Aug.) 1935.

Experiments proved that spirochetes penetrated the skin of mice only when the emulsion was vigorously rubbed into the skin.

INFLUENCE OF RELAPSING FEVER ON SYPHILIS IN RATS. M. SUGINO, Lues: Bull. Soc. japon. de syph. **7**:186 (Aug.) 1935.

The investigations of Sugino did not show any influence of infection with relapsing fever on syphilis in rats.

SYPHILITIC REACTION OF PRISON INMATES AND THE RELATION BETWEEN SYPHILIS AND CRIME. G. SUGISHITA, Lues: Bull. Soc. japon. de syph. **8**:71 (Feb.) 1936.

The author studied the incidence of positive Wassermann and Sachs-Georgi reactions of the blood in 771 prison inmates, 632 of whom were males and 139 females. Positive reactions were observed in 21.36 per cent of the males and in 23.02 per cent of the females. These figures are approximately 10 per cent higher than those for persons outside of prisons. The offenders were graduates of primary schools only, were from the lower classes, had abnormal sex desires and showed little concern for the prevention of venereal disease. Most of them were feebleminded, possibly owing to hereditary or acquired syphilitic infection. Sugishita concludes that syphilis is closely connected with abnormality and with crime.

SUPERINFECTION AND REINFECTION IN RABBIT SYPHILIS: V. ON THE RÔLE OF TRAUMA IN DEVELOPMENT OF THE SYPHILITIC LESION. K. SHIME, Lues: Bull. Soc. japon. de syph. **8**:135 (Feb.) 1936.

The skin of some rabbits was scarified and at the same time inoculated in another area with spirochetes of syphilis. The rabbits were then superinfected intravenously. Other rabbits were scarified at the time the intravenous superinfection was carried out. It was observed that the syphilitic papular eruption developed frequently in the scars resulting from scarification and often also in the neighborhood of such scars.

INVESTIGATION OF INTRACUTANEOUS INOCULATION OF BROWN-PEARCE'S CANCER IN RABBITS. I. Y. NOZU, Acta dermat. **26**:59 (Oct.) 1935.

In rabbits which had been inoculated intracutaneously with an emulsion of a Brown-Pearce tumor nodular induration appeared after from three to seven days, increased quickly, reaching the size of a pea or bean in from five to eight days, and then gradually decreased.

BLOOM, New York.

INVESTIGATION OF INTRACUTANEOUS INOCULATION OF BROWN-PEARCE'S CANCER IN RABBITS: II. ON THE DISPOSITION OF DIFFERENT PARTS OF THE SKIN FOR THE DEVELOPMENT OF INTRACUTANEOUSLY INOCULATED BROWN-PEARCE CARCINOMA. Y. NOZU, Acta dermat. **26**:64 (Oct.) 1935.

Nozu has found that a positive reaction to inoculation appeared most frequently on the skin of the abdomen and less frequently on the back, scrotum or penis. A negative reaction to inoculation was obtained when the ear was inoculated.

INVESTIGATION OF INTRACUTANEOUS INOCULATION OF BROWN-PEARCE'S CANCER IN RABBITS: III. FORMATION OF METASTASES IN OTHER ORGANS AFTER INTRACUTANEOUS INOCULATION. Y. NOZU, Acta dermat. **26**:66 (Oct.) 1935.

Metastases were found in seven of forty-one rabbits exhibiting a positive reaction to inoculation with Brown-Pearce's cancer, and in two of eighteen rabbits showing no local reaction to the inoculation. The glands in different parts of the body were enlarged in the form of multiple nodes; occasionally multiple nodular indurations were found in the kidneys, in the lungs or in both. The degree of metastases was much milder and the percentage smaller after intracutaneous inoculation than after intratesticular inoculation.

BLOOM, New York.

STUDIES ON ERYTHEMA ANNULARE RHEUMATICUM. ARVID WALLGREN, Acta pædiat. **17**:447, 1935.

Erythema annulare was first described by Lehndorff and Leiner in 1922. They considered it to be a pathognomonic sign of acute rheumatic fever. There has been a surprising paucity of published references to this exanthem since the original communication. In order to obtain information concerning the incidence and significance of erythema annulare, a careful watch was kept for its occurrence in the Children's Hospital of Gothenburg, Sweden, during the period from 1931 to 1934. During this interval of four years one hundred and forty-six children with acute polyarthritis, rheumatic fever, rheumatic carditis or chorea were cared for in the hospital. Eighteen of these patients (12 per cent) exhibited erythema annulare on one or more occasions during their stay in the hospital. The exanthem was usually associated with severe rheumatic disease, and it was never encountered in a patient who was unequivocally free from rheumatic infection. However, the occurrence of erythema annulare does not always presuppose the presence of clinically demonstrable involvement of the heart, nor can it be accepted as an index of the degree of activity of the rheumatic process. Frequently, erythema annulare appears early in the course of rheumatic fever; rarely, it may be the earliest symptom. In some subjects the rash tends to be recurrent during exacerbations of rheumatism as well as in the course of other nonrheumatic infections. Pathogenetically it is to be regarded as angioneurosis of a rheumatic and allergic nature, which occurs in highly susceptible persons. Its development may be accelerated and its characteristics intensified by subjection of the skin to extremes of heat and cold. In one of Wallgren's patients mental strain caused the rash to reappear on several occasions. This paper includes a brief but useful bibliography.

McCUNE, New York. [AM. J. DIS. CHILD.]

INVESTIGATION OF A NEW BLOOD COAGULANT. B. BRAHN, A. KLARENBEEK and T. LANGNER, Nederl. tijdschr. v. geneesk. **79**:4362 (Sept. 14) 1935.

The authors examined the clotting-promoting effect of a preparation obtained from pectin and consisting nearly exclusively of the oxymethylic ester of galacturonic acid, in rabbits. On oral, intramuscular and subcutaneous administration it was effective three hours after it was given. On intravenous injection it acted immediately, and the effect lasted for many hours; no harm was ever seen to result even from intravenous injection of doses of 100 cc. of a 2.5 per cent solution.

TREATMENT OF FAVUS IN THE DERMATOLOGIC CLINIC OF THE UNIVERSITY OF LEYDEN (NETHERLANDS). H. W. SIEMENS, Nederl. tijdschr. v. geneesk. **79**:5140 (Nov. 2) 1935.

The routine treatment of favus, practiced with satisfactory results, is described in detail. The main principles of the treatment are as follows: thorough examination of the whole family before starting treatment and simultaneous treatment of all the diseased members, epilation by means of roentgen irradiation, ablution with soap, application of ointment, induction of peeling of the skin by tincture of iodine, maintenance of alopecia by manual epilation and extensive clinical and microscopic control of the results.

VAN CREVELD, Amsterdam, Netherlands. [AM. J. DIS. CHILD.]

TREATMENT OF ERYTHEMA NODOSUM (ERYTHEMA INDURATUM BAZIN) WITH INJECTIONS OF THE PATIENT'S OWN BLOOD. JOHANNES HEIMBECK, Norsk. mag. f. lægevidensk. **96**:390, 1935.

Two patients suffering from erythema nodosum chronicum with ulcerations were treated with intramuscular injections of their own blood given in small weekly doses—1, 1.5 and 3 cc. and later 3 cc. during from two to three months. The ulcerations healed, and the erythema disappeared.

TOVERUD, Oslo, Norway. [AM. J. DIS. CHILD.]

Society Transactions

NEW YORK ACADEMY OF MEDICINE, SECTION OF DERMATOLOGY AND SYPHILIS

FRANK C. COMBES, M.D., *Secretary*

Feb. 4, 1936

MAX SCHEER, M.D., *Chairman*

A CASE FOR DIAGNOSIS. Presented by DR. HERMAN GOODMAN.

M. G., a woman aged 50, born in Austria, has lived in the United States for twenty-four years; she has been married eight years and is childless. She states that she was well until eight years ago, when she was first troubled with itching. Four years ago the disturbance became sufficiently severe to cause her to seek medical aid. She was treated by several physicians. About two years ago she received roentgen treatments. For twelve days she was at the Mount Sinai Hospital under the care of Dr. Highman, but she does not know what was done while she was there. A biopsy was made, but the patient does not know the results.

She weighs 210 pounds (95 Kg.). Apparently she has normal intelligence. There is slight scaling of the upper left eyelid which is temporary. Along the anterior border of the sternocleidomastoid muscle is a definite line of demarcation. Below this line the skin is rough, exhibiting exaggerated lines of cleavage, mildly dilated capillaries and discoloration. The skin of the upper aspects of the breasts is dry and wrinkled (anetoderma?); that of the under surfaces (the areas which received roentgen therapy) is mottled, dry, scaly and atrophic. The skin of the abdomen is wrinkled, dry and hard. In the groins the skin is discolored and irregularly pigmented in streaks and shows irregular areas of infiltration. On the lower portion of the legs there is one dry infiltrated patch along the upper third of the left tibia. The soles are clear.

Across the back there is an irregularly triangular patch over the lower part of the dorsal portion of the spine, the upper angle and base of the patch being located about the level of the iliac crests. This triangular patch is about 4 by 3 inches (10 by 7 cm.). It is raised above the level of the surrounding skin with irregular verrucous-like projections, some of which seem hematomatous. There is a definite deep indentation along the upper third. The entire upper crust (if it is a crust) seems movable over the underlying dermis, which was formerly ulcerated. Below the triangular mass extending irregularly to the upper portion of the anal cleft and surrounding the anal region is a band of infiltration 1½ inches (3.8 cm.) wide. To the right, between the cleft and the triangular mass, is a definitely reddened flat infiltrated area which fades on pressure.

There are no general symptoms. The patient is unable to lose weight. In 1933 she weighed 195 pounds (88.5 Kg.), and in 1926 her weight was 175 pounds (79.4 Kg.). The menses are regular and normal.

This patient exhibits so many lesions which fit a number of conditions that it is thought interesting to present her for a clinical diagnosis before assembling the pathologic material. Laboratory investigations will be made and reported on at a future meeting.

DISCUSSION

DR. FRED WISE: There is little doubt in my mind that the patient exhibits what is known as a pluriglandular syndrome and that the glandular disturbance is expressed chiefly in the form of scleroderma. I should interpret practically

all her lesions as scleroderma, some being of the morphea type and some of the scleroderma papyraceum type. The inconclusive results of examination for endocrine disorder may not be due to an absence of glandular disturbances but rather to the fact that the disturbances cannot be detected.

Dr. Eugene Traugott Bernstein: A patient with an eruption associated with Zondek's pluriglandular syndrome complex was presented in Munich, Germany, in 1922, and the scleroderma-like changes were a striking feature in that case also. However, there were also some atrophy and scarring.

Dr. A. Benson Cannon: I wish to recall to the members' attention a case of a similar disorder which I presented a number of years ago and which was recently presented again by Dr. Hopkins. The patient was a stout woman with changes in the skin similar to those in Dr. Goodman's patient. The condition was most marked over the breast, and there were a great deal more atrophy and telangiectasia. Roentgenograms of the pituitary body showed a tumor of the gland. The patient was treated with high voltage roentgen therapy to the tumor.

Dr. Louis Tulipan: I saw this woman about three years ago. At that time she presented a lesion on the back which consisted of glistening nodules that appeared like bullae. On examination, however, they were found to be more dense and hard, and on puncture they yielded a thick yellowish gelatinous fluid. A biopsy was made. The report was lymphangioma circumscriptum. I think the appearance still justifies that diagnosis. At that time there was not as much atrophy as is now present over the rest of the body. I agree with Dr. Wise that the disorder is now generalized scleroderma, but I do not know how to associate the lymphangioma circumscriptum with the scleroderma.

Dr. Abraham Walzer: I observed this patient about four years ago over a period of about eight months at Dr. Lapowski's clinic. At that time she had definite scleroderma with atrophic areas. There is no doubt that many of the lesions which show atrophy now were then sclerodermatous and arranged in patches, lines and guttate groups and spots. She also showed then over the region corresponding to the lower end of the spine a large ulceration, the cause of which was not clear at that time. It was about the size of half a palm and was raw and bleeding. It took a long time for it to heal.

Dr. Oscar L. Levin: I observed the patient at Mount Sinai Hospital several years ago when she was in the service of the late Dr. Highman. At that time the main feature was the large, deep ulcer on the back, which covered the area now represented by a large scar. At that time there were lesions of scleroderma and atrophy associated with stigmas of pituitary involvement. The large ulcer was deep, and I was much surprised this evening to see how well it had healed. The disorder in the case which Dr. Hopkins presented some time ago differed from this one in that the patient showed more marked evidence of pituitary disease and presented numerous large telangiectatic changes, especially over the breasts, a condition which I have often observed in acrodermatitis chronica atrophicans. Dr. Goodman's patient does not show these changes, but she does exhibit atrophy as the end-result of infiltration of scleroderma. I believe that the seat of the disorder will be found in the pituitary gland. In discussing Dr. Hopkins' case I suggested the possibility of basophilic degeneration of the pituitary gland being present.

Dr. Leo Spiegel: I saw this patient about five years ago in my clinic, and at that time the lesions were all on the lower portion of the arms and were all sclerodermatous. Tonight the disorder appears to be scleroderma with atrophy.

A Case for Diagnosis (Psoriasis Ostreacea? Syphilis?). Presented by Dr. Louis Chargin.

A. I., a man aged 35, was presented by Dr. Isadore Rosen at the meeting of the Manhattan Dermatologic Society in January 1936 (Arch. Dermat. & Syph. **34**:723 [Oct.] 1936).

In spite of antisyphilitic treatment the eruption has progressed, and there is a papulosquamous eruption on the face, neck and ears. Some of the eruption is confluent. On the arms, legs, buttocks, glans penis and upper portion of the back there is an extensive eruption, some of which is papulosquamous and the rest of which consists of papules covered with an oyster-like scale or crust. The individual lesions vary in size up to that of a 10 cent piece. The crusts are easily removed, showing a moist surface almost level with the skin. Nearly all the lesions show a reddish border which extends beyond the central scale or crust. The nails, palms and soles are unaffected. The mucous membrane has shown no eruption at any time.

A biopsy was reported on as follows: There was marked round cell infiltration around the blood vessels, and the character of the inflammatory exudate below the epidermis was suggestive of syphilis.

A second biopsy was made a few days ago, but the results have not been reported yet.

DISCUSSION

DR. ISADORE ROSEN: Dr. Chargin has stated most of the important facts about this case. All I can do is to discuss it from the clinical standpoint, as I had the advantage of seeing the patient on eight or nine different occasions. The first time I saw him at the clinic of the Mount Sinai Hospital I did not hesitate to make the diagnosis of papulosquamous syphilis. The lesions on the face were strongly suggestive of syphilis. In regard to those on the trunk there was a question as to whether they were psoriasis or syphilis. The polymorphous character of the eruption was striking. There were small papules, large papules, large scaly lesions that looked like seborrheic dermatitis on the face and an unusual annular group of lesions on the shaft of the penis and on the glans.

At present the lesions have been influenced by the treatment the patient has received. Whether the improvement is due to the antisyphilitic or to the local therapy I cannot say. However, the oyster shell type of lesions has persisted. Such lesions are seen occasionally in psoriasis and frequently in syphilis. One cannot make a positive diagnosis of syphilis in the face of such active lesions associated with repeated negative serologic reactions. However, cases of active syphilis with negative serologic reactions do occur. I think that this case must still be studied from other angles before an absolute diagnosis can be made.

DR. ADOLPH ROSTENBERG: May I suggest that in view of the history of gonorrhea in this case one should also consider the possibility of keratoderma blennorrhagicum. Perhaps the disease is in an early stage and the characteristic lesions on the feet and other portions of the body generally affected have not yet developed. The lesions on the penis are characteristic. In a case which I described there were some similar lesions, but there were also arthropathic changes. These are not always necessary to establish the diagnosis, however.

DR. A. BENSON CANNON: In my opinion the lesions more closely resemble syphilis than any other disease I know. The locations—especially the fact that they occur on the face—the grouping of the lesions and the vegetative character of some of the crusted ones are highly suggestive of a rupial type of syphilis, although I cannot reconcile the diagnosis of syphilis with the doubtful Wassermann reaction and the patient's lack of response to antisyphilitic treatment. I think that Dr. Rostenberg's suggestion of keratoderma blennorrhagicum is excellent, although I think the lesions are not characteristic of that disease. I think it would be interesting to see the results of intensive treatment with old arsphenamine and potassium iodide. I believe that arsenic is a possible cause of the keratoderma, and I suggest that the patient's blood and urine be examined for that metal.

DR. LOUIS CHARGIN: In answer to Dr. Cannon, I should like to make a correction in the history. The patient received old arsphenamine, not neoarsphenamine. The various diagnoses which have been mentioned were, of course, considered, especially that of keratoderma blennorrhagicum. A urethral smear was

examined, but the results were negative except for a few pus cells. The complement fixation test for gonorrhea was positive, but that does not mean much in this case. Many persons who show a positive reaction do not have gonorrhea, and vice versa. I should rather favor the diagnosis of psoriasis, for the following reasons: The patient had some lesions on the penis which were probably fresh lesions of psoriasis. Under arsenical medication the psoriasis was activated, a response of acute exudative psoriasis occurring. Against syphilis is the fact that in spite of active treatment, consisting of ten or twelve injections of arsphenamine since December 15, an equal number of injections of a bismuth preparation and four injections of mercury and potassium iodide, there has been no involution of the process. The histologic picture does not indicate syphilis, but it does not indicate psoriasis either. I feel that the disorder will eventually prove to be psoriasis. With regard to the eruption on the face, I agree that it looked like syphilis when I first saw the patient, but it also suggested seborrhea. When the lesions were examined closely they were found to be infiltrated papules covered with scales and crusts, with a definite red border—exactly like those seen in psoriasis ostreacea. As a local remedy a weak ammoniated mercury ointment was prescribed for use on the face. The crusts were thereby easily removed; the exuding underlying surface was even with the skin, showed no infiltration and resembled the exudative type of psoriasis when the scales and crusts were removed. Dark field examination of a cutaneous lesion gave negative results when I first saw the patient. By that time he had already received treatment. A gland could be excised and macerated, and material could be injected into an animal; if the patient will consent, this will be done. At present the question is: Shall the patient be treated for psoriasis or for syphilis?

DR. OSCAR L. LEVIN: I saw this patient on one occasion when he was presented at the clinic conference at the Mount Sinai Hospital. I said at that time that there were five conditions to be considered, namely, psoriasis, tertiary syphilis, eruption due to iodide, keratoderma blennorrhagicum, and possibly an infection with an uncommon type of micro-organism. I still think that the lesions should be examined carefully from the standpoint of bacteriology. I do not believe that the disorder is keratoderma blennorrhagicum because of the change in the appearance of the lesions, the absence of lesions on the hands and feet and the absence of symptoms of arthritic involvement. The diagnosis of eruption due to iodide can be readily excluded. The lesions suggest syphilis only remotely. I believe that the patient has psoriasis ostreacea, which diagnosis I favored at the last presentation. The lesions on the penis and on the arms especially suggest psoriasis. I advised that antisyphilitic remedies be withheld and that the patient be treated for psoriasis with local remedies, measures to induce sweating and a modification of his diet, particularly with a reduction in the intake of fats and with a salt-free regimen.

DR. FRED WISE: I should like to point out that those of the members who saw many eruptions of syphilis in days gone by, on looking at this patient's face would without hesitation diagnose the eruption as syphilis. The confusion arises from the lesions occurring elsewhere. I agree with the points brought out by Dr. Rosen. I believe that no one can make a definite diagnosis in this case. However, in summing up the situation, taking into consideration the fact that the patient did have a 3 plus Wassermann reaction at one time and that at present the reaction of the blood is reported to be 4 plus from one laboratory and negative from another, I should be more inclined to accept the report of the positive reaction, and even if I ignored it, I should still be inclined to regard this eruption as syphilis recalcitrant to treatment. A gland should be excised and examined. What is the family history in regard to psoriasis?

DR. LOUIS CHARGIN: The family history in regard to psoriasis is negative. In regard to syphilis it is also negative. As far as I know the patient's wife and two children have negative Wassermann reactions.

Toxic Eruption Resembling Lichen Scrofulosorum in a Patient with Pulmonary Abscess and Osteo-Arthritis Pulmonaris; no Evidence of Active Tuberculosis. Presented by Dr. Eugene Traugott Bernstein.

S. G., a boy aged 14, is presented from the Mount Sinai Hospital because of an eruption on the trunk, buttocks and neck of ten months' duration, which began with grouped arrangements. He was first admitted to the hospital on Oct. 22, 1931, three months after he underwent a tonsillectomy; the symptoms were fever, a foul sputum and loss of weight. The Pirquet and Mantoux tests were negative. On Oct. 27, 1931, culture of the sputum showed aerobic Streptococcus viridans, Staphylococcus albus and Bacillus coli. On Oct. 24, 1931, the sputum showed Staph. albus, Pneumococcus type X and Str. viridans (alpha) but no tubercle bacilli. The patient was admitted again on June 10, 1933, for thoracotomy. Bacteriologic examination on Nov. 25, 1933, showed Staph. albus and Staphylococcus pyocyaneus. The patient was given roentgen therapy from Dec. 2, 1933, to June 1934. On May 18, 1935, he was referred to the dermatologic clinic where a tentative diagnosis of lichen scrofulosorum was made, and he was treated with ultraviolet radiation.

The eruption shows clinically all the features of lichen scrofulosorum, namely, skin-colored, mostly follicularly arranged papules from the size of a millet seed to that of a pinhead. By running the hand over the surface one receives a nutmeg grater sensation.

On January 12 tuberculin tests gave results as follows: Negative reactions after forty-eight hours to dilutions of 1:1,000,000, 1:100,000, and 1:1,000.

The Wassermann reaction was negative.

On July 30, 1935, a yeastlike organism pathogenic for white rats was isolated from the sputum. This organism appeared in two subsequent specimens, but search for it since September has been unsuccessful.

The pathologic report on June 22, 1935, was as follows: There was hyperkeratosis but no parakeratosis. The hyperkeratosis was especially marked at the follicular opening. The epidermis around the hair follicle was acanthotic and showed definite papule formation. Around the hair follicle there was a moderate amount of inflammation, consisting mainly of mononuclear cells. There was also a moderate amount of vascular dilatation and perivascular lymphocytic infiltration in the upper portion of the cutis.

The present pathologic picture shows a moderate amount of hyperkeratosis with a few scattered patches of parakeratosis and a moderate amount of acanthosis over which parakeratosis is especially noticeable. A number of epidermal cells show intercellular edema with the nucleus pushed to the periphery. The papillary and subpapillary layers show marked edema. The blood vessels and lymph spaces are widened. Around a number of these blood vessels there are round cell infiltrations. There is moderate cellular infiltration, especially marked in the subpapillary layer, containing plasma cells, eosinophils and a few leukocytes and mononuclear cells. The number of fibroblasts is increased.

DISCUSSION

Dr. Marion B. Sulzberger: I think that clinically this eruption resembles lichen scrofulosorum to a high degree. That diagnosis cannot be excluded on the ground of mere lack of positive signs of active tuberculosis. In other words, proved and active lichen scrofulosorum is not necessarily associated with active pulmonary tuberculosis. Nevertheless, one cannot make a positive diagnosis of lichen scrofulosorum in this case in view of two facts: One is that other hematogenous follicular dermatoses, due to organisms or toxins or allergens other than those producing lichen scrofulosorum, can closely simulate that disease. There are, for example, certainly cases in which lichen trichophyticus is clinically indistinguishable from lichen scrofulosorum. Likewise other organisms, such as Monilia, have been reported to cause similar lichenoid exanthemas. Eruptions of this type may even be due to drugs such as arsphenamine. The second fact which points against the diagnosis of lichen scrofulosorum is that the histologic picture is

not typical of lichen scrofulosorum. These two considerations make one say that this is a lichen scrofulosorum-like eruption due to some hematogenous agent. This case has not been sufficiently studied to establish or rule out any diagnosis. I suggest that other biopsies be made with a view to finding tuberculoid structures and that more quantitative tuberculin tests be made; the Mantoux and above all the Moro test should be made on the lesions. The Moro test is one of the most characteristic criteria for the diagnosis of lichen scrofulosorum. The lesions may be hypersensitive to Moro's tuberculin while the remaining skin is insensitive to local intradermal administration of tuberculin. Other similar tests should be performed with products of the micro-organisms from the pulmonary abscess or of the other organisms which may be located in various foci in this boy's body.

DR. EUGENE TRAUGOTT BERNSTEIN: The striking feature of this eruption, which is probably toxic, is the pinhead-sized papular lesions arranged in coin-shaped groups and involving the sites of predilection of lichen scrofulosorum. The literature indicates that the histologic picture shows all transitional forms: It is interesting that Fox, Miller and Schweninger and Buzzi reported eruptions resembling lichen scrofulosorum in which the histologic picture was typical of lichen scrofulosorum, but they did not find any characteristic features of typical tuberculous or tuberculoid structures. Gilchrist found the same thing. This boy has a pulmonary abscess and a pulmonary osteo-arthropathy, but two sections did not show any evidence of tuberculous structures. The striking feature in this case is that he shows lichen scrofulosorum clinically and no active tuberculosis. As for tests with tuberculin, I do not think that more tests will reveal other results. I have presented this patient because I think that probably in many cases of lichen scrofulosorum which have been reported the manifestations were not typical but were only a coincidental occurrence with some pulmonary process.

LICHEN PLANUS OF THE MOUTH WITH ULCERATIONS UNDERGOING POSSIBLE MALIGNANT DEGENERATION IN A SYPHILITIC PATIENT. Presented by DR. EUGENE TRAUGOTT BERNSTEIN.

B. M., a woman aged 63, is presented from the Mount Sinai Hospital for suggestions as to therapy. There is a healed lesion on the right arm, reported to be lichen planus histologically. The tongue is edematous, infiltrated and covered with white patches (leukoplakia) on the lateral margins. There are yellowish ulcerations and some desquamation with reddish borders. There is reticulation, indicating lichen planus. The duration of the disorder is two and a half years.

The blood count showed 98 per cent hemoglobin, 5,720,000 red cells and 10,200 white cells. The differential count showed 55 per cent polymorphonuclears, 2 per cent staff cells, 1 per cent eosinophils, 6 per cent monocytes and 36 per cent lymphocytes.

On Jan. 28, 1930, the Wassermann reaction of the blood was 2 plus and 3 plus. The patient received sixty-five injections of a bismuth preparation, the last treatment being given on July 18, 1933. The last Wassermann test, made on March 3, 1934, was negative.

On Feb. 6, 1931, the biopsy report was as follows: The diagnosis was leukoplakia. There was no evidence of epithelioma. The section showed a chronic process, with dense infiltration of small round cells, the cells being packed like lymph nodes in some areas. A considerable number of plasma cells were present.

DISCUSSION

DR. CHARLES WOLF: The lesions on the dorsum of the tongue are strongly suggestive of interstitial glossitis. The leukoplakia is present on various parts of the buccal mucous membrane. However, the patient also has lichen planus, and possibly some lesions on the buccal mucous membrane are lichen planus. The lesions on the forearm are rather typical of lichen planus, and in view of that fact one must consider the possibility that some of the lesions in the mouth are lichen planus.

DR. JOSEPH J. ELLER: I agree with Dr. Wolf that the lesions in the mouth look like either severe leukoplakia of external origin or leukoplakia caused by previous syphilitic lesions. Leukoplakia due to smoking or other irritating substances does not show a different microscopic picture from that caused by previous syphilitic lesions. Neither does leukoplakia of syphilitic origin disappear under antisyphilitic therapy.

DR. FRED WISE: I should be disinclined to make any diagnosis on the basis of the short inspection which I had the opportunity to make tonight, but I must say that I cannot see any real reason why the presenter's diagnosis cannot be accepted. I do accept it.

DR. ISADORE ROSEN: I agree with the remarks of Dr. Wise. It is difficult to make a positive diagnosis after one superficial examination. I can understand the patient's having a leukoplakia and lichen planus, but how about the ulcers which have been present for a long time? I should like to suggest another diagnosis in this case, that of a drug eruption. Often phenobarbital taken over a long period produces lesions on the trunk and buccal mucosa simulating leukoplakia, lichen planus and even pemphigus.

DR. LOUIS CHARGIN: I inquired into the question of drugs because this disorder resembles that in a patient whom I presented years ago with a diagnosis of leukoplakia and ulcers of the tongue. There is no history of ingestion of drugs in this case. There is no doubt that the eruption on the arm and that on the surface of the tongue are lichen planus. However, the eruption on the sides of the tongue is not lichen planus. I agree with Dr. Rosen. I think that a biopsy should be made to determine whether the lesion is undergoing malignant degeneration.

DR. EUGENE TRAUGOTT BERNSTEIN: I considered the question of drugs, and there is no history of ingestion of drugs. I did not consider the lesions as lichen planus but only emphasized the fact that they were ulcerated. Further studies will be made. My co-workers and I consider the disorder a precancerous condition, and at the present time we are unable to obtain a biopsy. The reticulation was highly suggestive of lichen planus. I also wish to point out the coincidental eruption on the lips which is a little suggestive of lupus erythematosus. It is not lupus erythematosus, but the feature which points to lupus erythematosus also points really to lichen planus of the mucous membranes.

A CASE FOR DIAGNOSIS (KERATODERMA PALMARE SYMMETRICUM?). Presented by DR. HENRY D. NILES.

J. S., a girl aged 17, born in the United States, was first seen on Jan. 28, 1936. She is an only child, and neither her parents nor any other relative has any cutaneous trouble. The present condition started when she was 3 years of age, with thickening, redness and peeling of both palms and redness of the soles. After a short time the soles became normal, but there was an increase in local temperature and sweating of the palms, which disappeared several years ago. The lesions have never itched or caused any other sensation. Since the onset, the palms have given off a sour odor like that of yeast; this has gradually diminished, and the condition is improving in other respects. There is no seasonal variation. The menses started at the age of 12 and have been normal since. Weight has been quite constant, and the general health is excellent. Between the ages of 2 and 5 years the patient from time to time took a few drops of a solution of arsenic which caused some improvement. About a month ago, an examination for tinea, a Wassermann test of the blood, urinalysis, twenty-five scratch tests and a general physical examination all gave negative results.

The skin of both palms is symmetrically involved, and there is a sharply outlined border between the palms and the normal skin at the junction of the palm and the flexor surface of each wrist and in the first interspace of each hand.

There is no scaling or vesiculation. There is an area of normal skin the size of a finger-tip in the upper part of the center of each palm. The finger-nails and toe-nails are not involved. The feet are normal except for slight peeling under all the toes and some hyperhidrosis between the toes. The rest of the skin and hair is normal except for slight redness and dryness of the skin on the lower portion of the legs.

The basal metabolic rate is —14 per cent. Intradermal injections of trichophytin and oidiomycin gave negative results.

DISCUSSION

DR. FRED WISE: I think that the diagnosis is correct.

DR. HENRY D. NILES: I think there are several interesting features. One is the exact symmetry with the sharp margins between the palms and the flexor surfaces of the wrists and on the dorsal surface of each interspace. There has been some spontaneous improvement with appearance of symmetrical patches of clear skin on each palm. Another feature, which is not so evident tonight as when I saw the patient before, is the definite acid odor like that of yeast. That has always been present. I presented this patient partly for suggestions as to therapy. She has received no real treatment yet. As Dr. Scheer has stated, arsenic was given after this eruption appeared, but only small doses were administered.

A CASE FOR DIAGNOSIS (MYCOSIS FUNGOIDES?). Presented by DR. GEORGE M. LEWIS.

C. P., a man aged 25, a clerk, states that two years ago an eruption which he thought was hives appeared on the face and body. At that time he suffered from indigestion. Since then various types of lesions have appeared. Itching has been variable, being worse when the patient is excited or nervous. He has noted an absence of hair in patches on the trunk for a year and a half.

There is an eruption on the face, trunk and extremities consisting of reddish papules and plaques of various sizes. Some of the lesions are superficial and appear eczematous; others are infiltrative as seen clinically, particularly in the region of the groin. Numerous marks of scratching are present.

There are several areas of total alopecia on the trunk and a number of areas of apparent alopecia on the left eyebrow and on the trunk in which the hair has broken off at or below the surface of the skin. In these areas there is some apparent follicular hyperkeratosis. While many of these areas of alopecia may be at the sites of former lesions, such a relationship is not established in each instance.

The white blood count and differential count were normal. The Wassermann reaction was negative. The histologic picture was suggestive of early mycosis fungoides.

DISCUSSION

DR. E. WILLIAM ABRAMOWITZ: I agree with the diagnosis of mycosis fungoides.

DR. CHARLES WOLF: Although the diagnosis of mycosis fungoides cannot be ruled out, I favor some other diagnosis. The age of the patient is not against mycosis fungoides. However, it seems to me that some pathognomonic signs are necessary for that diagnosis to be established. Although the biopsy remotely suggests the picture of mycosis fungoides, some of the important features, subjective as well as objective, are lacking, viz., marked itching and lymphadenopathy. The disorder may be a toxic eruption resulting from injection or absorption of drugs or heavy metals such as nickel, arsenic or bismuth. I therefore suggest that the urine and blood be examined. In my opinion treatment should consist of roentgen radiation locally, large doses of sodium hyposulfite internally, continued over a long period, and a change of occupation.

DR. DAVID BLOOM: Although I believe that the disorder is mycosis fungoides, I wish to ask Dr. Lewis if he does not find it unusual to see so many marks of scratching in mycosis fungoides.

DR. FRED WISE: I believe that on the basis of the polymorphous lesions, the different shades, the different stages of development and so forth, the most acceptable clinical diagnosis is mycosis fungoides, but the absence or relative absence of itching speaks against the diagnosis. The second point against the diagnosis is the histologic picture. I had occasion to examine the section. There was no evidence of mitoses; the cellular infiltration was rather uniform; there was no multiplicity of types of cells in the infiltrate, and although the infiltration was in the usual location below the epidermis, in my opinion the histologic evidence as a whole was not sufficient to establish the diagnosis of mycosis fungoides with certainty. Dr. Lewis says that he will get a biopsy specimen from one of the infiltrated lesions. I suggest that other diagnoses, such as aleukemic leukemia, be considered.

DR. LOUIS CHARGIN: There is no doubt that the clinical impression is that the disorder is mycosis fungoides, and the question I wish to ask is this: Should this not be considered a premycotic stage of mycosis fungoides rather than mycosis fungoides, especially in view of the histologic picture? It has been stated repeatedly that mycosis fungoides is mycosis fungoides from the start. Is it or is it not? Most of the members would call this disorder clinically the premycotic stage of mycosis fungoides, and yet the histologic picture is not that of mycosis fungoides.

DR. GEORGE M. LEWIS: One of the features in this case, namely, the presence of areas of alopecia and pseudo-alopecia on the trunk, has not been commented on by any of the members. I wonder if any one present has noted this feature in connection with mycosis fungoides or with toxic or other eruptions?

DR. CHARLES WOLF: That particular feature occurs occasionally in toxic eruptions due to various drugs, especially to thallium, arsenic and nickel.

DR. FRED WISE: Dr. Wolf's discussion interested me. Am I not right in believing that thallium causes alopecia only of the scalp? Does it cause alopecia all over the body? If that drug can cause a loss of hair, would the loss occur in patches, as does alopecia areata, or would it be diffused?

DR. E. WILLIAM ABRAMOWITZ: In answer to Dr. Chargin's remarks, I wish to say that I have seen early stages of mycosis fungoides in which the pathologists did not find the typical picture of mycosis fungoides but in which the picture appeared later. Nickel produces an eczematous eruption by external contact, but as far as I know this dermatosis has not been reported from an internal source. The alopecia due to thallium affects the scalp, sometimes the eyebrows and lashes and occasionally the face but hardly ever the body of man. Leukodermatous patches, of course, may appear on the body. It is possible that this type of eruption may be produced by drugs, but I think that in most instances such a cause is taken too much for granted and not proved. I think that this patient's disorder should be considered as some type of lymphomatoid disease and that further developments should be reported.

DR. EUGENE TRAUGOTT BERNSTEIN: Leukemia and eruptions of aleukemic leukemia may produce alopecia areata-like patches.

DR. GEORGE M. LEWIS: Dr. Bloom is correct in saying that scratch marks are seldom seen in cases of mycosis fungoides. The marks of scratching on this patient's skin are to be noted on or near the more superficial lesions. The points in favor of the diagnosis of mycosis fungoides are that (1) the history reveals pruritic, recurrent eruptions over a period of two years, (2) there is no history of ingestion of drugs, (3) many different types of lesions are to be seen, (4) there is a beginning infiltration in certain lesions and (5) the histologic picture indicates mycosis fungoides. The biopsy specimen was removed from an early lesion. I shall try to get another specimen from a more advanced lesion showing some infiltration clinically.

MYCOSIS FUNGOIDES. Presented by DR. E. WILLIAM ABRAMOWITZ.

L. M., a man aged about 70, in the care of Dr. Jacob Skeer, was previously presented by Dr. B. Lapowski, from the Good Samaritan Dispensary, as Mr. M. M., with the diagnosis of Kaposi's sarcoma (ARCH. DERMAT. & SYPH. **33**:170 [Jan.] 1936). At the time of the previous presentation there were typical granulomatous tumors on the body characteristic of mycosis fungoides. Many of them have now partly regressed as a result of roentgen radiation, given by Dr. Milton G. Wasch at the Israel-Zion Hospital. The question of Kaposi's sarcoma arose because the patient also presented flat pigmented macular lesions on the legs and toes.

A specimen for biopsy was taken from the granulomatous lesion on the neck, which had not yet been treated with roentgen radiation. The histologic picture was characteristic of mycosis fungoides. A small piece of skin excised from one of the spots on the shin also presented the infiltration usually seen in mycosis fungoides, but it was not as marked as in the specimen from the lesion on the neck. A small piece of skin was excised from one of the pigmented lesions on the toes; microscopic study of this revealed nothing abnormal. These specimens indicate that there is no evidence of Kaposi's sarcoma in the skin of this patient. A recent blood count showed secondary anemia and a slight eosinophilia. A Wassermann test was negative.

DISCUSSION

DR. ISADORE ROSEN: I should like to know whether any histologic studies have been made of any of the lesions on the feet.

DR. ABRAHAM WALZER: Dr. Lane was present at the previous presentation, and he, as well as Dr. Wise, suggested that the disorder was probably a combination of mycosis fungoides and Kaposi's sarcoma. Since this presentation two biopsies have been made. One was reported to show an exudative eczematous infiltration, and the other, mycosis fungoides. The patient presents a pigmentation and hemorrhagic appearance which are not typical of mycosis fungoides.

DR. E. WILLIAM ABRAMOWITZ: This patient was treated by Dr. Wasch, the roentgenologist at the Israel-Zion Hospital. Dr. Skeer, of the dermatologic department, called to my attention the fact that this patient had been presented by Dr. Lapowski. I remember the discussion that arose because of the pigmentation on the legs and feet, which was believed to be due to Kaposi's sarcoma. From the three specimens it is evident that this patient has mycosis fungoides. Another point in favor of that view is that the treated lesions have regressed rapidly as a result of roentgen irradiation.

DERMATITIS IN A FRUIT HANDLER. Presented by DR. EUGENE F. TRAUB.

M. C., a man aged 29, born in the United States, is presented from the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital. He complains of an eruption of unknown etiology on his hands and face, which has been present for seven years. He was first seen in April 1932, and after extensive laboratory work a diagnosis of arsenical dermatitis was made. This diagnosis was based on the finding of 0.14 mg. of arsenic in 100 Gm. of solid matter. Examination also showed 0.016 mg. of lead in 1,000 cc. of urine. He had a positive reaction to a patch test with arsenic tri-oxide. The tests with pentavalent arsenic gave negative results. Sodium thiosulfate given intravenously at biweekly intervals, together with local treatment consisting of roentgen irradiation and application of ointment, cleared the eruption in about seven weeks, but there were mild exacerbations at intervals until June 27, 1932, when cure apparently occurred. There was a severe flare-up in the fall of 1935. The patient was again submitted to a complete set of patch and intradermal tests in an attempt to determine the cause of his dermatitis. All reactions were negative with the exception of those to the skins of all citrous fruits that had been dyed (oranges, lemons, grapefruits and tangerines), which were markedly positive. These fruits had been dyed and packed

in California and Florida. The skin of the fruits which had not been dyed produced no reaction. Control patch tests with dyed and undyed fruits on other patients produced no reactions.

According to the United States Department of Agriculture, the approved food dye which is still being used for artificially coloring fruit is yellow orthotoluidine betanaphthol, as well as a combination of two dyes similar to sudan I and sudan II, except that one is formed by coupling xylidine and amido azoxylene on betanaphthol and the other by coupling orthotoluidine on betanaphthol, both processes being carried out in alkaline solution.

This case has interested the Department of Agriculture, and at the request of that department all additional factors used in artificial aging and coloring of oranges were tested by patch tests, namely, with ethylene, kerosene, sodium borate and paraffin, and the tests were repeated with the dyes used. All the reactions were negative except when the dyed peels themselves were directly applied to the skin.

DISCUSSION

DR. MARION B. SULZBERGER: I understand from the chart and the presentation that the dye which is held responsible for the production of this dermatosis is one of the sudan dyes. It is known from experience and from the literature that the sudan dyes are among the dyes most commonly producing eczematous forms of hypersensitivity (see, for example, Simon and Rackemann: J. A. M. A. **102**:127 [Jan. 13] 1934). While positive reactions to these dyes are not infrequent, the real interest in this case lies in the fact that Dr. Traub's ingenuity has uncovered this perhaps important and interesting manner of exposure. It would be interesting to try to follow up more cases of disorders of this type, because frequently there is a history that a patient's dermatosis became worse after he handled citrous fruits and even colored vegetables, and it is possible that frequently not the natural fruit or its natural pigment but the artificial dye may be responsible. The question is whether natural dyes, the natural colors in fruits, can also play such a rôle. Dr. Rostenberg Jr. and I had an opportunity of examining a cook in whom an eruption developed on the arms every time she peeled carrots. Patch tests were made with carrots, turnips and orange peel and with the natural pigment of these plants, namely, carotene. This patient was found to be sensitive to carotene, the natural pigment found in carrots and oranges. Hence one must consider at least two possible causes in the contact dermatoses from fruits—the natural coloring matter or other normal ingredients and the artificial coloring matter or sprays and adjuvant substances which may have been used.

DR. EUGENE F. TRAUB: This is not an uncomplicated disorder. When the patient was first seen in 1932 he exhibited positive reactions to patch tests with a trivalent arsenic preparation, and a considerable quantity of arsenic was found in the urine. It was considered at that time that the patient was suffering from a dermatitis due to arsenic, as the fruit handled had been heavily sprayed with this chemical. He was treated for a long time, improvement and remissions alternating, and finally, when the eruption had practically disappeared, the patient did not come back. He was seen again in the fall of 1935, at which time he had a fresh dermatitis but did not react positively to any of the routine materials with which he was tested. It is important to note that all the tests with arsenic made at this time gave negative results. In the last years various citrous fruits coming both from Florida and from California have been subjected to an artificial aging and ripening process and have been dyed so that they give the appearance of evenly ripened fruit. When he was seen in 1933 the patient reacted positively to the skin of all such dyed fruits and negatively to the peels of similar undyed fruit. Fruits so dyed and treated coming from Florida must be stamped "dyed" according to a state law. California, however, has no such law. The Department of Agriculture has been much interested in this case and has cooperated in an attempt to determine exactly which process was responsible for the patient's dermatitis. Special tests with dye were made. The patient reacted positively to

yellow orthotoluidine betanaphthol but negatively to the different sudan dyes. He will be tested with ethylene sodium borate and other chemicals used in the artificial aging and ripening process. An important point noted in testing this patient was that not only did he show a decided local reaction when tested with the skin of dyed citrous fruits, but he exhibited a marked focal reaction as well, the sites of his dermatitis being distinctly aggravated directly after the test. Recently one of the men from the Department of Agriculture gave the patient a dyed orange to hold in his hands for ten minutes and was actually able to observe a beginning erythema and tiny vesiculation along the lateral surfaces of the fingers.

A Case for Diagnosis (Eczema?). Presented by Dr. Henry D. Niles.

T. G., a man aged 32, is presented from the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital because of a generalized eruption of eight weeks' duration. The eruption began on the dorsum of the right hand and then spread during a period of two weeks until it reached its present state. The patient works in a medicine factory and handles castoria, talc, methyl salicylate, sugar, sodium bicarbonate and Rochelle salts (potassium and sodium tartrate). He takes castoria and occasionally phenolphthalein. One year ago he took bromoquinine for a cold.

There are generalized scaly eczematous patches from the size of a 5 cent to that of a 50 cent piece; they are sharply defined, salmon pink and roughly round. There are more patches on the extremities than on the trunk. There is slight induration, and the scales are fine. The scalp is moderately scaly, and the hair is thin on the frontal and parietal areas. The interspaces between the toes are clear. The lesions itch considerably.

Examinations of both feet for tinea gave negative results on smear and culture. Culture of the stools for Monilia, cutaneous tests with 1:100 solution of oidiomycin and 1:30 solution of trichophytin and patch tests with the substances handled at work gave negative results. A biopsy was reported to show eczema.

DISCUSSION

Dr. Fred Wise: All I can say is that I agree with the diagnosis of eczema. I think that physical examination will not reveal any particular abnormalities, and fungi may not be revealed even after prolonged examination. I believe that the disorder is a seborrheic eczema which requires drastic treatment. The patient will probably get well after four or five weeks of treatment with weak chrysarobin ointment and then have recurrences. This is the type of disorder in which laboratory investigations are futile; at least that has been my experience with most disorders of this kind.

Dr. Marion B. Sulzberger: Unfortunately all one can say is that the disorder is eczema, one of the few diseases remaining in the heterogeneous group of original eczemas which still cannot be classified further either etiologically or pathologically. There is as yet no proof that such disorders are due to an external irritant or that they are direct infections or "ids" due to fungi, to bacteria or to a virus or that they are due to definite metabolic or other systemic disorders. However, they may in the future yet be proved to be due to any one or to a combination of these factors. But at present all one can do is to classify them as eczematous eruptions of unknown origin; in other words, as eczema. The old name for this type of disorder was nummular eczema, parasitic eczema, orbicular eczema or psoriasiform eczematid. I think that all these disorders belong in one group, and the study of these conditions is not fostered by the use of the various descriptive names. Although scientific study has not clarified the situation the study of these diseases should be continued by all possible means. In my experience with this group of common disorders (and I have investigated many, both at the clinic and at my office), patch tests usually give negative results and fungus extracts give

inconclusive or negative results; administration of sedatives and general and systemic therapy do not help, and elimination of allergens or desensitization with trichophytin, oidiomycin and other vaccines is of no benefit. I agree with Dr. Wise that the treatment is purely empirical; although the local treatment often affords only symptomatic and transitory relief, in some cases permanent cures are obtained. The best results are undoubtedly reached when one ceases to treat these disorders as eczema and treats them locally as parasitic diseases, that is, when one ceases to soothe them and instead uses mild parasiticidal remedies, such as weak chrysarobin ointment, salicylic acid, resorcinol paste, dihydroxyanthranol in low concentrations and similar preparations. Of course, one must always be prepared for a possible irritation from these remedies, but in general one can clear up such eczema for a while at least with such parasiticidal preparations. Another therapeutic agent which, I believe, is beneficial is generalized ultraviolet therapy; I have found it to be superior to roentgen irradiation. Many patients with this type of disorder do not tolerate greasy ointments or oil locally applied.

DR. SAMUEL M. PECK: I agree with Dr. Wise that certainly little benefit is derived in most disorders of this type from the information obtained with cutaneous tests. The routine treatment for eczema does little. However, the use of antiparasitic ointments does give good results in some instances. Dr. Chargin may recall two cases; in one treatment consisted of chlorhydroxyquinoline ointment; in the other it consisted of a 50 per cent sulfur salve. The tendency to recurrence is marked, however, and in time there is superimposed a dermatitis from the antiparasitic salve used which interferes with the therapy for the recurrences.

DR. E. WILLIAM ABRAMOWITZ: I wish to report a somewhat humiliating experience. In a physician whom I had been treating for a recurrent seborrheic dermatitis there finally developed a generalized eczematous eruption. He was tested by an allergist and found to be sensitive to certain foods. Various topical applications and elimination diets produced no results. The itching became unbearable one night; so he applied a strong counterirritant containing methyl salicylate, which not only relieved the itching but caused the eruption to disappear.

DR. HENRY D. NILES: This is the type of disorder which has interested me a great deal for some time. I have had the same experience as Dr. Wise and Dr. Sulzberger, namely, that the tests are not helpful. I do think, however, that it is important to present patients with disorders of this type and to discuss the cases from a practical point of view because the disorders are common. Such eruptions are seen nearly every day at the office and at the clinic. No one knows much about them or how to cure them. I can cure them temporarily with means other than those which have been mentioned. I have found, for instance, that they respond rapidly to small doses of roentgen rays but that the relief is only temporary. They also respond to tar in pastes better than to tar in ointments. However, nothing will clear them up permanently. They recur rapidly, more rapidly than any other condition I know of, reappearing in a week or two. The apparent symmetry and generalized distribution always suggest to me an internal origin, possibly an infection. In this case the stools were examined for Monilia, as I thought there was a possibility that the disturbance was due to that organism. One examination gave negative results. That does not rule out that possibility. I certainly think that this eruption may be due to a reaction to fungi in the gastrointestinal tract or to a fungous infection elsewhere. I am going to investigate the case further from that angle.

SCLERODERMA; MORPHEA. Presented by DR. MAX SCHEER.

A. S., a woman aged 42, is presented from the Mount Sinai Hospital, because of an eruption on the upper portion of the left arm and left breast of three years' duration. The patient was first seen three years ago with scleroderma involving the left forearm and extending up the inner side of the arm to the upper part

of the chest at the anterior axillary border. A biopsy made at that time was reported to show "typical scleroderma." This condition is now represented by areas of pigmentation. Some evidence of scleroderma is still present on the upper inner aspect of the left arm. The patient was treated with tissue extract and massage, and almost complete disappearance of the eruption resulted. About three months ago she returned with a new lesion on the left breast. This consists of an ivory-white firm plaque which is sharply bordered and is about 2 inches (5 cm.) in diameter. It has the characteristic lilac-colored halo. The Wassermann test was negative. The basal metabolic rate, determined on Aug. 11, 1933, was —6 per cent. The patient is now receiving injections of a preparation containing a mixture of pancreas, stomach and other tissue in doses of 1 cc. weekly.

The disorder has been present for three years, during which no change in the eruption occurred, and after injections were given it rapidly disappeared. When the injections were discontinued the eruption recurred.

SEQUELAE TO ROENTGEN IRRADIATION TREATED WITH REPEATED APPLICATIONS OF ULTRAVIOLET RAYS. Presented by DR. MARION B. SULZBERGER.

E. F., a woman aged 36, a physician's x-ray technician, is presented to demonstrate the beneficial effects of repeated small doses of ultraviolet rays on sequelae of roentgen irradiation. The patient was first seen in 1934, at which time she presented a disorder due to roentgen irradiation consisting of keratoses, beginning ulcerations, numerous small warts, dryness, scaling and a few telangiectases on both hands, and scaling and drying on the wrists and lower third of both forearms. The duration of the disturbance is twelve years. She has had "eczema" of the hands since the age of 12 and has been treated with roentgen rays during the last seventeen years by numerous dermatologists and one roentgenologist in America and in Berlin, Germany. She has taken no arsenic, with the exception of a few injections of a preparation containing iron and arsenic, which was given as a tonic many years ago. The patient has received, almost uninterruptedly since 1934, suberythema doses of ultraviolet irradiation from a quartz lamp once or twice weekly to the affected areas. There has been marked and steady improvement, so that now all types of lesions have almost disappeared and the skin is almost normal. The patient is presented in order to illustrate the remarks in reference to the local treatment with ointment containing viosterol made at the January meeting of the section (ARCH. DERMAT. & SYPH. **34**:903, 1936).

DISCUSSION

DR. EUGENE F. TRAUB: I am not certain who was the first one to suggest that ultraviolet rays might prevent sequelae to roentgen irradiation, but I do know that this idea was popularized some years ago by Sampson, who suggested this agent both for prevention and for treatment of sequelae to irradiation. I was much interested in this at the time and used the subject as the basis for a thesis. A large series of patients were treated with carefully measured doses of roentgen radiation on one small area of skin. Another area was similarly exposed and given a dose of ultraviolet radiation, and on a third area roentgen and ultraviolet radiation were superimposed. This was done in various ways; namely, the two types of radiation were superimposed on the same days or on different days. Biopsies were taken from the various areas at different intervals after the exposure. In each case a section of normal skin was also removed for study. The late Dr. Walter Highman examined, and reported on, hundreds of these sections for me. No matter what combination was used as regards time or dose, the ultraviolet radiation invariably intensified the effect of the roentgen radiation. Another way of testing the same thing was to give subepilating doses to the scalp and then follow this treatment with intense ultraviolet radiation. My co-workers and I found that instead of preventing an epilation, as had been previously reported, the ultraviolet radiation had the opposite effect. It completed the epilation in

cases in which the roentgen radiation had been insufficient. I have used the ultraviolet rays in small doses in an attempt to stimulate healing in cases of ulceration resulting from radiation. It is possible that small, carefully administered doses may stimulate regeneration and repair in other types of radiation sequelae, but the case presented tonight is a questionable example of such an effect. This patient not only had ultraviolet therapy but received careful manipulation of the hands and treatment with various ointments. What basis is there, therefore, for the assumption that the ultraviolet radiation achieved this favorable result rather than the ointments and massage? Until results are controlled more carefully, one has no right to assume that a specific remedy is responsible for an improvement or cure when other remedies are used at the same time. This is particularly true when carefully controlled experimental evidence conclusively proves that the ultraviolet rays definitely intensify effects of radiation. This warning may not be necessary, as probably most of the members are aware of the dangers attending this type of therapy.

DR. ADOLPH ROSTENBERG: I remember distinctly a report by the late Dr. Highman in which he said that he had inadvertently given an overdose of roentgen rays to a patient and expected a burn to result. He gave that patient ultraviolet radiation and no burn occurred.

DR. FRED WISE: This case interests me much. Dr. Sulzberger states that definite roentgen ray dermatitis was improved by ultraviolet irradiation. I am interested because of my own roentgen ray dermatitis; in the summer even five minutes of direct exposure to sunlight produces an exacerbation of itching and scaling. Lomholt, of Copenhagen, Denmark, reported that at his clinic good results follow ultraviolet radiation, and that fact has to be taken into consideration. What puzzles me is this: there are many cases of roentgen ray dermatitis in the United States and one does not hear of cures resulting from ultraviolet radiation, in spite of the fact that numerous practitioners have ultraviolet lamps available and use that type of treatment. Perhaps there are some unusual elements in this patient's skin that cause it to respond favorably to ultraviolet radiation. It is known that in many cases roentgen ray dermatitis responds unfavorably to any form of irradiation.

DR. SAMUEL FELDMAN: I recall one case of severe roentgen ray dermatitis in which a large ulcer on the abdomen was treated for a long time with ultraviolet radiation, doses that did not produce any burn but merely a stimulation being used. The patient is completely well after five or six years. I think, therefore, that if a dose of ultraviolet rays is used which does not produce a burn but just causes a mild stimulation that treatment is helpful in cases of roentgen ray dermatitis.

DR. SAMUEL M. PECK: It is difficult to compare experimental work with ultraviolet rays on reactions to roentgen rays with the condition which Dr. Sulzberger's patient exhibits. In discussing the effect of ultraviolet rays on reactions to roentgen rays the time factor must be considered accurately. As Miescher has shown in studying reactions of the skin to roentgen rays, erythema due to roentgen rays occurs in a series of waves. The primary erythema is not important and occurs in the first few days. This is followed in from four to six weeks by another spontaneous erythema, and finally there is a third wave of erythema, which may not appear for months. The histologic changes differ with each of the waves. In the studies which I made with reactions to thorium X on which was superimposed ultraviolet radiation there was no neutralizing of the effect of thorium X by the ultraviolet radiation; instead there was an added reaction.

DR. E. WILLIAM ABRAMOWITZ: Dr. MacKee and Dr. Andrews did some work to show that the ultraviolet rays definitely enhanced the effect of the roentgen rays. There is said to be an activation of the cholesterol bodies in the skin after exposure to the ultraviolet rays. I have seen excellent results of ordinary emol-

lient treatment in cases of roentgen ray dermatitis. In other cases all kinds of treatment are ineffective, and a plastic operation becomes necessary.

DR. DAVID BLOOM: At present I am treating a young man who has roentgen ray dermatitis of the dorsa of the hands, and I noticed considerable improvement in the texture of this patient's skin after mild doses of ultraviolet radiation. I believe, however, that the improvement is due not to the ultraviolet radiation but to avoidance of irritation and to application of protective ointments.

DR. MARION B. SULZBERGER: I cannot see any connection between Dr. Traub's remarks and the case which I presented. Dr. Traub's experiments were entirely different from the treatment I applied; they were entirely prophylactic, and his whole problem seems unrelated to the one under consideration. I am also, in general, opposed to the treatment of roentgen ray dermatitis with ultraviolet radiation. I think that one must distinguish between the acute forms, the chronic forms and the hyperkeratotic forms of sequelae. This patient had roentgen ray dermatitis twelve years before I started to treat her; hence there was no possibility of studying antagonism between the two types of radiation. However, I also have investigated the report of antagonism between roentgen and ultraviolet rays by means of experimental studies on rabbits' ears. In my experiment there was no neutralization or reduction effect, but rather a synergy.

This patient received treatment with mild doses of ultraviolet radiation regularly twice a week for over two years. That is perhaps one reason for the good result. The other possible reason is that I used small doses, never applying sufficient radiation to produce an erythema. I present this patient not so much because of the benefit which seems to have resulted from the treatment and the theoretical interest attached thereto, but because the disorder did not get any worse. I should have expected the actinic effect of the rays to have made the hyperkeratoses and telangiectasiae worse, but this has certainly not occurred. There is a possible relationship between the direct irradiation of the lipoids in the skin and the treatment by inunction of irradiated sterols.

OSLER'S HEREDITARY FAMILIAL TELANGIECTASES. Presented by DR. SAMUEL M. PECK.

CASE 1.—K. D., a man aged 30, is presented from the hematologic and dermatologic services of the Mount Sinai Hospital. He has had recurrent nosebleeds practically daily for twenty-two years. The patient's mother and grandmother have the same condition. He exhibits typical telangiectatic lesions of the mucosa as well as scattered telangiectases on the chest and arms. The patient is being treated with 2 cc. of moccasin venom in a 1:3,000 dilution three times a week. Marked amelioration of the bleeding has resulted.

CASE 2.—M. B., a man aged 67, is presented from the hematologic and dermatologic services of the Mount Sinai Hospital. For the last fifteen years the patient has had nosebleeds practically daily. His daughter has the same condition. He exhibits scattered telangiectases on the mucosa of the nose and lips. The patient is receiving subcutaneous injections of moccasin venom, 2 cc. of a 1:3,000 dilution being given twice a week. Under this treatment the bleeding has diminished markedly in duration and frequency.

DISCUSSION

DR. SAMUEL M. PECK: These patients have to be given continuous treatment with the venom in order to control the symptoms. Discontinuation of the treatment results in prompt recurrence of bleeding. Before treatment with venom was given these patients had been refractory to radium therapy and all sorts of local measures. This is obvious from the nature of the disease.

A CASE FOR DIAGNOSIS: TOXIC ERYTHEMA (DUE TO SODIUM MORRHUATE?). Presented by DR. MAX SCHEER.

NEW ENGLAND DERMATOLOGICAL SOCIETY

J. HARPER BLAISDELL, M.D., *Secretary*

Feb. 12, 1936

WILLIAM P. BOARDMAN, M.D., *President*

A CASE FOR DIAGNOSIS (ALEUKEMIC LEUKEMIA? LYMPHOMA WITH EXFOLIATION?). Presented by DR. C. GUY LANE, Boston.

SCLERODERMA; PSORIASIS. Presented by DR. E. LAWRENCE OLIVER, Boston, and DR. H. GROH, New Bedford, Mass.

O. B., a woman aged 53, English, a housewife, states that she has noticed loss of hair and gradual tightening of the skin; the finger-tips are white and cold. The patient has one child, a girl, who is well. When the patient was 10 years old she was ill with a serious inflammation of the legs, and lesions like boils appeared. She was in bed for fourteen weeks. The condition spread to the arms. No diagnosis was made.

There are sclerodermatous changes involving the face and upper extremities and psoriatic lesions on the elbows and knees.

Examination of blood taken from the arm gave negative results according to the patient. For ten weeks she has received solution of posterior pituitary, and remarkable improvement has resulted.

DISCUSSION

DR. WILLIAM P. BOARDMAN, Boston: The disorder does not appear like psoriasis to me. The firm, tender lesions are more like scleroderma.

DR. E. LAWRENCE OLIVER, Boston: I wish to say that improvement has been marked in this case. Dr. Groh said that improvement was noted since injections of solution of posterior pituitary were given. The medication has been given every day for ten weeks. I think it is about time to discontinue it. The patient states that she is getting nervous. I do not know whether fear of the needle or the actual treatment is the cause of her nervousness. She admits that her face is improved. She can pick up the skin from the bony prominences, a thing which she could not do at all two or three months ago. My co-workers and I have made the same observations on eight or nine patients with disorders of this type whom we treated within the last two years. There was almost bony hardness of the skin, but after a few months of treatment with solution of posterior pituitary the skin became much more soft. The treatment was stopped and then started again after a few weeks' rest. It was also noted that the patients could move their hands more freely. One patient before treatment could not close his fist. After a few injections were given the mobility of the hands greatly increased. We cannot say that all those patients were cured, but they showed marked improvement. How much more this patient will improve I cannot say.

ERYTHEMA INDURATUM. Presented by DR. E. LAWRENCE OLIVER, Boston.

A man aged 23, a baker, states that one and a half years ago he noticed an erythematous raised area on the calf; this soon broke down, and similar lesions appeared, ulcerated and healed slowly and then broke down again.

On admission to the hospital, on Jan. 11, 1936, the patient had two undermined ragged tender ulcerations on the lower portion of the right leg with indurated margins and an erythematous subcutaneous mass higher in the calf.

Urinalysis, blood counts, a Hinton test and cultures for anaerobic streptococci gave negative results. A test with tuberculin in a 1:1,000 dilution produced a marked reaction. A biopsy showed changes consistent with erythema induratum.

Treatment has consisted of irradiation from the water-cooled quartz mercury vapor arc lamp and application of a dressing of zinc oxide ointment.

DISCUSSION

DR. E. LAWRENCE OLIVER, Boston: The circulation seems to be better. Patients with erythema induratum always have poor circulation, and ulceration is associated with poor circulation. This disease occurs rarely in males.

The histologic picture is consistent with erythema induratum. In some cases results of inoculations of animals have been positive and in others they have been negative. It is interesting that in the original description of the disease little or nothing is said about ulceration.

DR. J. H. SWARTZ, Boston: This is an interesting case. I saw this patient in the ward when he was first admitted. He presented an interesting picture. The lesions were undermined, and although the diagnosis of erythema induratum was considered, it was not considered seriously for the following reasons: (1) because the patient is a man, (2) because the lesion is unilateral and (3) because there is undermining. Several attempts to culture symbiotic streptococci and staphylococci were unsuccessful. It is interesting to note that the report on the biopsy confirms the diagnosis Dr. Oliver made.

ACNE VULGARIS. Presented by DR. MYER MAURICE TOLMAN, Chelsea, Mass.

R. C., a boy aged 14, American, for the past year has had papulopustular acne and comedones over the face and back. Two weeks ago deeper masses developed, which increased in size and became more tender. The patient has many sebaceous abscesses on the face and marked acne on the back. He is rather pale and underweight.

Urinalysis gave normal results. Examination of the blood showed 4,960,000 red cells and 22,350 white cells. The differential count showed 78 per cent polymorphonuclears, 11 per cent lymphocytes, 3 per cent monocytes, 1 per cent basophils and 7 per cent myelocytes.

DISCUSSION

DR. WILLIAM P. BOARDMAN, Boston: I wonder if it would be worth while to give injections of saline solution intravenously and directly into the lesions. Some investigators suggest that deep lesions such as those exhibited by this patient are not the same as those which appear in eruptions due to iodide and bromide; the latter respond rapidly to saline solution.

DR. FRANCIS M. THURMON, Boston: I have had the opportunity to observe some of the cases of acne that Dr. Lawrence is studying in the medical clinic at the Boston Dispensary. In his report concerning the use of gonadotropic substance from the urine of pregnant women in cases of dysmenorrhea he called attention to the fact that as soon as the dysmenorrhea was relieved the acne disappeared. It has subsequently been found that most patients with acne, both males and females, do not show marked improvement as a result of this therapy. The majority of patients show improvement, but it is only temporary. There is a recurrence of acne from three to five months after treatment is discontinued. I have seen two patients with a disorder similar to that in this patient, whose condition was definitely aggravated after treatment with the gonadotropic substance from the urine of pregnant women. Their faces were so disfigured and swollen that they had to be hospitalized.

DR. E. LAWRENCE OLIVER, Boston: Last year I saw a patient with dysmenorrhea who had received prolonged treatment with the aforementioned substance, and at the end of the treatment there developed severe acne which had not been present before treatment. The woman was over 25, a rather late period for acne to develop. I felt the gonadotropic substance had something to do with the development of acne.

DR. HARVEY P. TOWLE, Boston: I have seen some patients with acne whose condition was definitely aggravated after treatment with the gonadotropic substance.

DR. JOHN G. DOWNING, Boston: I wish to mention an achievement of Dr. Cotton in a case of acne. For a long time he and I had considered the possibility of remolding some old scars of acne. Finally I referred to him a boy with severe acne which had resulted in deep scars. Dr. Cotton sent the boy to the hospital and removed some fat from the buttocks; then he incised the area of scarring undermining the skin and put into those little pockets some of the fat removed from the buttocks. Much to my surprise, the results were excellent. The resulting scar was smooth and hardly noticeable.

MONILETHRIX. Presented by DR. E. LAWRENCE OLIVER, Boston.

A CASE FOR DIAGNOSIS (POIKILODERMA VASCULARE ATROPHICANS?). Presented by DR. J. H. SWARTZ, Boston.

This woman, aged 43, twenty years ago noticed a small red and slightly itchy area on the right forearm. Six months later a small lesion appeared on the left upper anterior aspect of the chest. This eruption enlarged and spread downward over the breasts to the abdomen and genitals and finally involved the extremities and back.

On admission six years ago the patient showed on the neck, chest, abdomen, and extremities many mottled areas of hyperpigmentation intermingled with pinhead-sized atrophic spots. In addition, the elbows and upper portions of the forearms showed telangiectasia simulating poikiloderma. Rather marked vasomotor instability was demonstrated. The patient was then studied, and a provisional diagnosis of poikiloderma vasculare atrophicans was made. The patient discontinued her visits to the clinic and reappeared in July 1935, when the following observations were made: The pigmented areas were larger and more diffuse. The atrophic areas in places, particularly on the upper portion of the back and in the axillae, simulated lichen planus atrophicans, but the picture of telangiectasia and atrophy simulating that found in poikiloderma vasculare atrophicans was much more marked and more extensive.

The urine was normal on repeated examinations. The cholesterol content of the blood was 312 mg.; the nonprotein nitrogen content, 42 mg.; the calcium content, 10.48 mg., and the phosphorus content, 5.23 mg., per hundred cubic centimeters. The hemoglobin content of the blood was 92 per cent (Sahli); there were 8,200 white cells and 4,560,000 red cells per cubic millimeter. The differential count showed 8 per cent eosinophils, 59 per cent polymorphonuclears, 24 per cent lymphocytes, 9 per cent large monocytes and no basophils.

On two occasions the basal metabolic rate was + 13 per cent and + 10 per cent, respectively.

Roentgenograms of the hands showed no definite evidence of abnormalities in the bone or articular surfaces of the regions examined.

Consultation with physicians of the endocrine clinic disclosed that there was nothing in the history or present condition of the patient suggestive of adrenal disease or any other endocrine disturbance.

RETICULATED PIGMENTED POIKILODERMA (CIVATTE); SCLEROPOIKILODERMA (KAETE, JAFFE). Presented by DR. WILLIAM P. BOARDMAN, Boston.

This woman, aged 59, American, has had an eruption on the neck for three years. The eruption started on the left side and spread over the entire neck; it was itching and painful, preventing sleep.

On Aug. 1, 1934, there were white areas measuring about 1 by 3½ inches (2.5 by 8.8 cm.) on the left side and shiny white thickened firm and not tender areas ⅜ by 2 inches (0.9 by 5 cm.) on the right.

Along the upper border of the lesion on the left are numerous areas of telangiectasia; few are present on the right. Beyond these areas, involving most of the neck on the open collar region in front and nearly meeting behind are dry brown somewhat lichenified areas which in places are distinctly macular, the macules being angular. In other places the pigmentation is diffuse by confluence of these macules. As a result of treatment infiltration has diminished markedly, and the white shiny appearance with telangiectasis at the border has disappeared. The pigmentation is more pronounced, but in places, especially on the back, there are reticulated flat white angular scars about ⅛ inch (0.3 cm.) in diameter. The pain and itching disappeared but recurred within the last month or two. At present, after further treatment, the subjective symptoms have subsided.

The Wassermann reaction was negative.

Treatment has consisted of solution of potassium arsenite, a proprietary pancreatic preparation and potassium iodide. Salicylic acid, resorcinol ointment, petrolatum and roentgen radiation have been applied locally.

Roentgen irradiation is the only treatment which brought results.

DISCUSSION

DR. E. LAWRENCE OLIVER, Boston: The patient has received a good deal of roentgen treatment, and it is difficult to say whether the reticulated areas of atrophy are due to roentgen irradiation or to the disease.

DR. WILLIAM P. BOARDMAN, Boston: The patient received nearly three units of radiation, but the atrophy was present the first day. There is remarkable improvement. The marked shininess has completely disappeared, and the patient is much more comfortable. The itching and pain which she had previously have disappeared. They recurred one year after treatment was discontinued. After one or two doses of roentgen irradiation they disappeared again.

The pigmentation and scaling were present before treatment was instituted. Roentgen irradiation was given also to the upper portion of the back and of the neck. Whether that had anything to do with the results I do not know.

CHICAGO DERMATOLOGICAL SOCIETY

RUBEN NOMLAND, M.D., *Secretary*

Feb. 19, 1936

MAX S. WIEN, M.D., *President, Presiding*

DERMATOFIBROSARCOMA PROTUBERANS. Presented by DR. THEODORE CORNBLEET and DR. EARL R. PACE.

This Negro, aged 28, presents a tumor situated roughly in the midline above the umbilicus and states that he noted the first nodule in this area twelve years ago. He has no knowledge of preceding trauma. The lesion has progressed slowly and asymptomatically.

There is an irregular hard sharply circumscribed platelike tumor, 8 by 4 cm., apparently originating in the skin but freely movable over the underlying tissues. It presents numerous pea-sized nodular irregularities of the surface with variable pigmentation, two dark reddish, nipple-shaped nodules from 1 to 2 cm. in diameter and one large soft dark red pedunculated globular tumor 3.5 cm. in diameter. The only ulceration or crusting is on the lower part of this tumor, where the belt caused irritation.

The Kahn reaction was negative.

A biopsy specimen from the right nipple-like nodule showed that the epithelium was moderately atrophic and some edema of the rete cells was present. The entire

cutis was filled with connective tissue. Some areas stained lightly with hematoxylin and eosin and with the Van Gieson stain, being made up of young connective tissue cells with large oval and stellate nuclei somewhat resembling myxomatous tissue. Such areas were irregularly mixed with more heavily staining areas in which fibers were arranged in fasciculi crossing each other wildly. The nuclei were somewhat compressed and elongated, suggesting a spindle cell arrangement. There was no evidence of anaplasia. Between these bundles could be found normal connective tissue. The blood vessels of the cutis varied in size and were lacunar.

DISCUSSION

DR. F. E. SENEAR: I saw this patient hurriedly, but I think the condition is a typical example of dermatofibrosarcoma protuberans. Cases of that disease appear to be seen in cycles; after my co-workers and I observed the first case presented in Chicago, the disorder having been identified by Cole, we recognized several more within a short time. Then no more were observed, but within the last few months we have observed several more.

DR. CLARK W. FINNERUD: The section, I believe, is identical with the one shown by Dr. Senear in connection with his case, and it is characteristic of this disorder.

DR. WILLIAM ALLEN PUSEY: I cannot distinguish these lesions from ordinary keloid. As I saw the specimen for brief examination under the microscope today it looked like a section from a keloid. I should like to know what essential difference there is. This patient's lesion has been present for twelve years and has grown slowly. It shows bands of connective tissue such as are seen in keloid. It seems to me that to classify the disease as sarcoma is to make things confusing I should be willing to prophesy that it will not prove malignant.

DR. F. E. SENEAR: Of course, there is no implication that the patient will die of sarcoma. This disorder has always been benign, and the lesion is recurrent, but the microscopic picture as seen in different places is variable. In some places it is that of sarcoma and in others that of fibroma. Some of the lesions begin as subcutaneous plaques which gradually enlarge, raising the skin over them, and then the tumors themselves show through. After some years the skin breaks, and the tumor is bright red and becomes soft. These lesions pursue a course entirely different from that of keloids in that they break down. There has been one case reported in which metastasis occurred. I agree that the lesions are not sarcomatous in the sense that they constitute a fatal disorder. It is purely on pathologic grounds that they are called fibrosarcoma rather than fibroma.

DR. WILLIAM ALLEN PUSEY: That is the point I am making. The only point that would distinguish these lesions from keloid is that in one case perhaps there has been metastasis, and that they sometimes form fungoid growths. I have seen lesions which clinically presented the same appearance, but I have never seen one degenerate in that way. I think that great confusion arises from making a diagnosis of sarcoma in cases in which none of the clinical essentials of that disorder are present. Every other characteristic is compatible with the diagnosis of keloid. A month or two ago there was presented before this society a case of a benign little fibroma that a pathologist had called sarcoma. If the name sarcoma is used in that sense it will lead to all sorts of confusion. Pathologists are likely to mislead one in many cases. I remember that Hartzell many years ago mentioned a case in which the disorder was regarded by the general pathologist as a most peculiar epithelioma. To the initiated it was plain molluscum contagiosum. I am willing to prophesy that this patient's lesion is a keloid of unusual type that probably will not cause any trouble, and if it causes trouble that can be explained on the principle that anything can happen occasionally.

DR. F. E. SENEAR: I agree with Dr. Pusey that the disease might well be called progressive recurrent dermatofibroma rather than fibrosarcoma, which would take away the term sarcoma, but I do not think that the lesions are anything like keloids in their development, their behavior or their course.

METASTATIC CARCINOMA IN PLAQUES. Presented by DR. RALPH C. BROWN and DR. OLIVER S. ORMSBY.

This man, aged 54, presents a cutaneous disorder of two months' duration. The lesions developed in rapid succession, the first one being situated on the anterior portion of the trunk to the left of the median line, in the epigastric region over the eighth and ninth ribs. Soon afterward a second lesion appeared in the abdominal wall on the right side, on a level with the umbilicus. The third lesion developed on the right side over the epigastrium, in relatively the same position as the first lesion described. Subsequently plaques developed about the clavicle on the right side and near the crotch on the left side, several smaller lesions appearing over the chest and back and one developing on the upper portion of the thigh on the right side.

The plaques are well defined and vary from 4 to 8 cm. in diameter; they are moderately elevated, have a well defined edge and are comparatively smooth on top. They are slightly reddish, and one has a bluish tinge. The lesion above the clavicle presents more the appearance of a nodular plaque and is somewhat more indurated than the others.

The histologic report by Dr. Nomland was as follows: A biopsy specimen taken from an infiltrative lesion on the abdomen showed a poorly marginated cellular infiltration just above the layer of fat of the cutis. There was no particular arrangement of the cellular infiltration. The majority of the cells forming the infiltrate were pale-staining epithelioid cells intermixed with pale spindle-shaped cells. Scattered through the infiltrate were small groups of from three to six cells that stained darker, were irregular in size and shape and resembled cells of epithelial structure more than anything else. These cells showed a considerable number of mitoses. The interpretation of the section was that the latter group of cells were true cancer cells and that the epithelioid cells were the product of the tissue reaction to the cancer cells.

Gastric symptoms appeared three months before the cutaneous lesions manifested themselves. Roentgen examination gave the following results, as interpreted by Dr. Squires: Two roentgenograms of the stomach showed marked irregularity of the entire organ, extending from the cardia to the pylorus. The largest defect was in the upper half. This suggested an extensive tumor, such as a lymphosarcoma.

DISCUSSION

DR. PAUL A. O'LEARY, Rochester, Minn.: Many patients with malignant tumors involving the viscera are seen at The Mayo Clinic, but few of them show cutaneous metastases. In the majority of the cases the tumors belong to one of two groups, being either adenocarcinoma or lymphosarcoma; tumors of the latter type are the more common. This patient has the plaquelike lesions seen in metastatic lymphosarcomatosis cutis.

DR. RUBEN NOMLAND: I studied the sections carefully, and I believe that the growth is a carcinomatous and not a sarcomatous metastasis, although the internists are inclined to believe that roentgenologically the lesion of the stomach has more of the characteristics of a sarcoma than of a carcinoma.

DR. CLARK W. FINNERUD: I agree with Dr. Nomland that the cells in the section are carcinoma cells. As Dr. Ormsby remarked, the large amount of inflammatory reaction is unusual. That reaction was evident even clinically.

DR. WILLIAM ALLEN PUSEY: Cases of such disorders, I believe, are uncommon, but formerly I saw many cases of metastases in the skin from the stomach and other internal organs. I have seen plaques and prominent nodules that were definitely adenocarcinoma.

DR. MAX S. WIEN: At the April 1931 meeting of the society I presented a man aged 64, with a disorder of this type (ARCH. DERMAT. & SYPH. **25**:162 [Jan.] 1932). This man had disseminated subcutaneous nodules of varying size and firm consistency on the trunk and extremities, some of which resembled the lesions exhibited by this patient. Histologically the lesions were carcinoma. Roentgen

examination revealed a filling defect about the pyloric end of the stomach, and my co-workers and I felt that we were dealing with a metastatic carcinoma of the skin secondary to a carcinoma of the stomach. At autopsy it was found that the primary focus was in a bronchus and that the changes which had been observed roentgenologically about the pylorus were produced by metastatic involvement of the peripyloric glands.

DR. OLIVER S. ORMSBY: In several cases I have seen sarcoid of the Darier-Roussy type on the back associated with some lesions on the abdomen, as in this case, but in those cases the major involvement has been on the back. I have also observed sarcoma with plaquelike lesions of this type, but I have never seen such a carcinomatous change. Examination of the section ruled out sarcoid and probably sarcoma, but even then the nature of the disorder was not perfectly clear, for there was a large amount of inflammatory reaction, which is not seen ordinarily in carcinoma. The patient probably presents the features of cancer en cuirasse. The disorder may be a retrogressing lymphatic invasion. The roentgenologist who examined the roentgenograms of the stomach suggested the diagnosis of lymphosarcoma rather than that of carcinoma. I think that within the last few years metastases of this form from the internal organs have been more prevalent than before. I am pleased that Dr. O'Leary saw the patient, for his experience is much more extensive than ours. I think one should consider the disorder a carcinomatous metastatic group of lesions of rather uncommon type.

A CASE FOR DIAGNOSIS. Presented by DR. F. E. SENEAR and DR. H. RATTNER.

This man, aged 25, at the age of 9 years began to have lesions like "canker sores" on the tongue; these gradually increased in size until they became ulcers. The buccal mucosa became involved, and at one time there was a single lesion of the esophagus. The lesions have recurred and the patient has never been entirely free from them for more than a week at a time.

The patient has received many types of treatment. Tests for sensitization have given a positive reaction for chocolate, lettuce, romaine and tomatoes, but exclusion of these articles from the diet has not improved the condition. He has also undergone several operations to relieve narrowing of the oral orifice.

DISCUSSION

DR. PAUL A. O'LEARY, Rochester, Minn.: About ten years ago I saw a girl 18 months of age with a condition like that exhibited by this patient. In my patient the disorder was in its early stages, while this patient has had it for many years. In my opinion the unique feature of this disorder is the ulceration with spontaneous healing that tends to obliterate the oral, anal or vaginal orifice. This man told me that he had ulcerations in the anal area that had produced definite constrictions in the anal canal. The history reveals that the scarring at the angles of the mouth is the result of surgical effort to widen the oral commissure. I had the opportunity to study the girl to whom I referred for many months, but I did not arrive at a diagnosis, and I was unable to discover the cause of the disorder. On several occasions ulceration about the lips healed spontaneously and in doing so sealed the lips so that feeding by means of a catheter was required. A similar ulceration healed the labia majora together.

The differential diagnosis included erythema multiforme, ulcerative vulvitis and stomatitis, periadenitis necrotica recurrens and allergy. Even ten years ago I endeavored to rule out a sensitivity to food in my patient by placing her for a prolonged period on a restricted diet, but no benefit was derived from the treatment. The recurrences are characterized by ulcerations of the type seen in erythema multiforme and are accompanied by rather pronounced systemic manifestations which disappear as the ulceration becomes less painful and starts to heal.

It is my impression that the disorder exhibited by this patient and by the girl to whom I referred represent a definite entity in which ulceration of the mucous membrane is followed by spontaneous healing which tends to obliterate the orifice involved.

Dr. Louis A. Brunsting, Rochester, Minn.: I understand that surgical intervention has been employed in this case, and it seems likely that further measures of this type will be necessary in view of the marked degree of contracture producing deformity of the mouth. One would think first of factitious dermatitis in view of the unusual story and the appearance of the mouth. Dr. O'Leary may recall the case of the man whom we saw in 1932. That patient gave a similar history of extensive ulcerations of the mouth which had recurred at intervals throughout the preceding seven or eight years. At the time of examination there was no actual deformity, as in this case, but there were active lesions in the mouth and also on the scrotum. The lesions on the scrotum had begun to appear about two or three years previously, and those in the two sites seemed to appear at the same time and cyclically. The patient's father had had eczema of the hands which was said to have borne some relationship to his diet. On this slim evidence we made cutaneous tests by intracutaneous injection of a variety of proteins of common inhalants and foods, and we were much surprised to observe a marked urticarial reaction to chicken and none to other substances. Tests by passive transfer by the Prausnitz-Küstner technic with the patient's serum showed a marked positive reaction to chicken meat and no reaction to feathers or egg or a few other materials that were used as controls. The patient had intelligence above the average. He was a sanitary engineer and was fairly well able to relate cause and effect; so he decided to try an elimination diet. As a result of this there was gradual improvement, and after six months there were no more recurrences. The patient has remained well during the ensuing two years, up to the present time.

In cases of recurring aphthous ulcers of the mouth, in those in which there is involvement of the mouth and scrotum or of the mouth and vulva or in those in which the disorder has been classified as periadenitis mucosa necrotica recurrens (Sutton) and in which there are cycles of exacerbation and remission it might be well to make investigation along similar lines. However, in several cases of similar disorders which I have observed subsequently to the case just mentioned the results of such an examination have not been particularly satisfactory.

Dr. Ruben Nomland: The condition is about the same now as when the patient was seen three or four years ago. The ulcers are painful.

Dr. William Allen Pusey: Why could not the disorder be an aphthous stomatitis that has run wild? There are cases in which that condition persists and recurs for years, and so far as I can see there is no difference except in the extent and the amount of scarring. I make the suggestion with due humility, but for lack of any other diagnosis I think that this idea is worthy of consideration. As to the cause, that cannot be discussed until the cause of aphthous stomatitis is found. I think that this patient's disorder is an aphthous stomatitis of unusual severity.

Dr. F. E. Senear: We had considered the disorder as probably being periadenitis necrotica recurrens or as being an exaggerated aphthous stomatitis. We presented the patient because he was eager to have suggestions regarding therapy. He has been at the Michael Reese Hospital, at the Rush Medical College and at several other institutions, and every conceivable type of examination has been made. We were glad to present him, although I did not think that any therapy could be suggested. I was glad to hear Dr. O'Leary's discussion of a comparable case.

With regard to Dr. Brunsting's patient who exhibited positive reactions to chicken, I wish to mention that my co-workers and I observed a similar case of periadenitis necrotica recurrens at the clinic of the university about a year ago. We saw the patient only twice before he discontinued his visits, but he came back a few months later and said that he had been referred to an allergist and had been found to be sensitive to several foods. After the diet had been corrected the trouble had disappeared and he had had no lesions since.

A Case for Diagnosis. Presented by Dr. Oliver S. Ormsby.

This woman, aged 35, presents a disorder of the nails of seven years' duration. There are pathologic changes in the nails of both hands and feet. The disorder began in the nail of the right index finger and gradually involved the other nails. The patient states that blisters have appeared on the soles at intervals for eighteen years and that her condition has been considered to be ringworm.

In June 1935 all the finger-nails except that of the right little finger were separated entirely from the nail bed, excepting a small rim immediately in front of the lunula. The surface between the nail bed and the nail plate was occupied by a large amount of what appeared clinically to be keratotic material. Some of the nails were elevated at an angle of 60 degrees. Careful microscopic examination of this material revealed no fungi. After salicylic acid had been applied locally the material under the nails became fungoid and discharged pus, and the areas became tender.

In addition to the changes in the nails there was discovered at the first examination a patch of dermatitis at the wrist, which was approximately the size of a silver dollar. This lesion was a dull red plaque, over which there were some keratotic scaling and a moderate amount of crusting. Gradual improvement occurred over a period of several months, but recently there has been a flare-up of the process with pain, tenderness and throbbing around all the finger-nails.

At present there is a profuse subungual hyperkeratosis involving all the fingers of the left hand and the thumb and first three fingers of the right hand to such an extent that the nails stand at an angle of 60 degrees from the nail bed. Moderate redness, swelling and slight tenderness of the paronychial tissue are present. On the finger-tips near several of the nails are lesions varying in size from that of a pinhead to that of a split pea with a slightly erythematous base covered with a heavy keratotic scale. One such lesion had no scale and appeared to be pustule-like and situated rather deeply in the corium.

The toe-nails show changes similar to but less marked than those in the finger-nails; in addition, the nails of the first two toes of the right foot have been shed, leaving only the heaped-up hyperkeratosis. One or two of the toe-nails show slight paronychial inflammation.

On the right forearm above the wrist is a palm-sized sharply circumscribed slightly elevated reddish lesion covered with heaped up scales which were quite easily removed. On the dorsum of the right hand is an essentially similar plaque the size of a silver dollar, which, however, exhibits a few superficial fissures. Scattered at other points on the cutaneous surface are smaller lesions of similar type, varying in size from that of a pinhead to that of a 5 cent piece.

DISCUSSION

Dr. Cleveland J. White: The subungual hyperkeratotic deposits of all the finger-nails except that of one little finger and the subungual separation of the nail plate of that nail as well as the presence of several encrusted erythemato-scaling plaques of the wrists point strongly to the possibility of psoriasis. A histologic study of one of these plaques may reveal one of the serious dermatoses, e. g., granuloma fungoides. Lack of destruction of the nail with powdery disintegration militates against the clinical diagnosis of onychomycosis of the hyphomycetic type; no doubt this possibilty has been ruled out by microscopic and cultural studies.

Psoriasis of the nails can occur without glabrous changes in the skin—although the latter usually follow in the course of months—or the involvement of the nails can follow psoriasis of the glabrous skin. The formation of hyperkeratotic deposits is one of the rarer manifestations; the commonly accepted description found in textbooks is that of punctate stippling. Other forms in my experience are the subungual separation, the biconcave appearance and the partial destruction or flayed-out picture. The condition may occur in patients as young as 3 years of age. In this case psoriasis certainly has to be considered.

Dr. Louis A. Brunsting, Rochester, Minn.: This patient has an unusually severe involvement of the hands and nails, but I should consider it as an atypical form of psoriasis. She has the obese pyknic constitution which so often characterizes patients with psoriasis.

In regard to other cases of psoriasis in which there is associated arthropathy, particularly when the terminal phalanges are affected, there is sometimes considerable involvement of the nails with the psoriatic process, and I should like to know the experience of the members as to whether there is invariably involvement of the nails in cases of psoriasis arthropathica.

Dr. William Allen Pusey: I think this is a case of psoriasis of rather unusual type.

Dr. Oliver S. Ormsby: I expected that the question of pustular psoriasis would be brought up in the discussion. This patient, however, does not present the disorder described by Barber as pustular psoriasis, by Dore and others as acrodermatitis perstans of mild type and by Andrews as recalcitrant pustular eruption of the palms and soles. In this condition the nails are not particularly affected, and when they are affected they present the appearance ordinarily seen in psoriasis. On the other hand, this patient's nails are affected much as they are in dermatitis repens of Crocker or in acrodermatitis perstans of Hallopeau. The palms and soles do not show the lakes of pus or flat pustules seen in either of the aforenamed conditions. The cutaneous lesions are limited, and while they are somewhat psoriasiform they alone clinically cannot be said to represent ordinary psoriasis. Ringworm has been definitely ruled out by microscopic examination. As the disorder resembles both psoriasis and acrodermatitis perstans, a definite diagnosis should not be made without further observation and research. Roentgen therapy was administered before I saw the patient, but apparently it had no effect.

A Case for Diagnosis (Foreign Body Tumor? Torulosis?). Presented by Dr. S. W. Becker.

This woman, aged 39, states that she first noted a lesion on the lateral surface of the upper portion of the right arm four months ago, which she regarded as a mosquito bite. It has been treated with a cataplasm of kaolin and glycerin. It has also been incised by a physician, and mercurochrome has been applied until the lesion healed. The cataplasm has not been applied to the open wound.

On the arm there is a lesion about 1 cm. in diameter which on pressure with the diascope is seen to contain two apple jelly nodules. One of the lesions was removed, and the wound has healed with a bluish tinge.

Biopsy showed a tuberculoid reaction and groups of round bodies of various sizes, which a differential stain for Torula (mucicarmine) did not stain. An attempt will be made to culture the tissue to determine the presence of yeasts.

Except for this disorder the patient is healthy.

DISCUSSION

Dr. Ruben Nomland: So far as I can see the diagnosis will rest on further laboratory study. I think that the question of tuberculosis or infection with Torula is still open.

Dr. S. W. Becker: When this patient was first seen I thought that she might have had an insect stinger in the skin and that perhaps the lesion was a foreign body tumor. One of the nodules with the apple jelly color was removed, and careful study disclosed a number of round bodies of various sizes, usually arranged in groups. I sent one of the sections to Dr. Montgomery, who was not able to make a diagnosis but thought that the bodies might be monilias. I sent a section to Dr. Belote, and he sent me a section showing generalized torulosis. While some of the organisms in that section corresponded to the ones my co-workers and I had observed, many of them were oval and some were almost elongated enough to be called hyphae. Mucicarmine stain for Torula was applied to sections

we had prepared, but these bodies did not stain at all. I sent a section to Dr. Weidman, who expressed the belief that the bodies are too small to be Torula and considered them to be probably Russell bodies. The reaction is of the chronic type, such as was seen in Dr. Wile's case of torulosis. The organism in this case may be some other type of yeast. The lesion will be removed under aseptic conditions, and attempts will be made to determine what the condition is.

HYPERTROPHIC SCARS TREATED WITH IRRADIATION. Presented by DR. L. F. WEBER.

E. P., aged 36, a drug salesman, sustained an acid burn on the left side of the face and neck on Feb. 1, 1934, and presented himself, requesting treatment for improvement of hypertrophic scars on May 15, 1934.

The left cheek showed scar tissue which was indurated and thickened from 3 mm. to 1 cm. Keloidal bands caused disfigurement of the left side of the nose, mouth and left eyelids. The growth was sensitive to pressure and painful.

The patient is presented to show the results of irradiation and actual cautery. This treatment had removed the elevated indurated scars, leaving them soft and smooth; there is a little telangiectasia below the left ear.

DISCUSSION

DR. WILLIAM ALLEN PUSEY: I have observed this case from the beginning, and when I saw the photographs I was reminded of how ugly those scars were before they were treated. This is one of the nice results obtained not infrequently in the treatment of hypertrophic scars.

DR. CLEVELAND J. WHITE: In some cases I have used the infra-red rays in the treatment of these hypertrophic keloids, and I think that that method is not nearly as efficacious as roentgen rays in the treatment of this type of keloid.

DR. OLIVER S. ORMSBY: What technic of radium therapy was employed?

DR. L. F. WEBER: The keloidal bands were treated with one-half strength radium plaques; the length of exposure was seven minutes. These treatments were repeated about every five to seven weeks, a total of seven exposures being given to the bands. On the cheeks the patient received one-half skin unit of roentgen radiation at two week intervals. The ridges and bands were marked off with lead filters so that no overlapping occurred with roentgen and radium radiation. Some of the bands on the nose where there were deformities were separated with the cautery and then treated with roentgen therapy. The radium was unfiltered, and it did not produce any redness. I have had occasion to treat about six patients with similar conditions, all of whom had sustained industrial trauma. The law of Illinois states that insurance companies must take care of all hypertrophic scars following injury. All the patients I have treated had early hypertrophic scars, and they were under treatment soon after the accident occurred. I have also treated several who had had the scars for longer periods, and have obtained fair results.

DR. WILLIAM ALLEN PUSEY: For many years I have been much interested in the results obtained in treating keloids by the combination of cautery and roentgen or radium therapy. For a long time I was doubtful about using the cautery in treating keloids. I recall the case of a girl with probably a dozen scars on the neck due to removing mollusca contagiosa whom I treated recently. They were well developed keloids, and I flattened them out by punctate cauterization and then applied radium. Flat scars in all the keloids have resulted. The method is, I believe, useful in the treatment of keloids.

DR. S. W. BECKER: In treating a young girl who had an acid burn on the chest followed by keloid which had been removed surgically but recurred I found that the intervals between exposure to roentgen rays must not be made too long; if they are the lesion has a tendency to extend.

DR. H. RATTNER: I have treated some keloids with the cautery and irradiation and others with irradiation alone. I think that in the case of the thinner scars irradiation alone produces better results.

DR. WILLIAM ALLEN PUSEY: I have had no occasion to regret using the cautery, and I have used it in treating some large lesions. I rarely use procaine hydrochloride; I do not find that it is necessary as a rule.

DR. EVERETT S. LAIN, Oklahoma City, Okla.: The method is not original, but one of my co-workers, Dr. Hazel, for some time has treated keloids by shaving them off and then applying radiation. This shortens the time of treatment and apparently improves the results formerly obtained by roentgen or radium therapy alone.

A CASE FOR DIAGNOSIS (PITYRIASIS LICHENOIDES ET VARIOLIFORMIS ACUTA?). Presented by DR. THEODORE CORNBLEET and DR. EARL R. PACE.

This youth, aged 19, of Greek parentage, was first seen about one year ago, at which time he exhibited an eruption over the trunk and proximal segments of the extremities which had been present for six months. The papules were pink and variably firm and ranged from the size of a pinhead to that of a pea; they showed no evidence of scaliness and were asymptomatic. There was a generalized barely palpable firm adenopathy. The Kahn test was negative. Two or three weeks later there appeared a few patches which in color, form and distribution suggested pityriasis rosea. There was present, particularly on the back, a depigmentation which resembled a macular atrophy until it was studied closely. The patient was not seen again until a week ago, but he states that the eruption cleared up for two or three months during the fall of 1935.

The present recurrence, or continuation, is similar in distribution and general character, except for occasional lesions which show a crusted summit which does not appear to be due to excoriation. The other papules have an abundant scale; this became evident only when light curettage was performed. In addition, a dozen or more violaceous or dusky red scaly irregular patches from the size of a pea to that of a silver dollar were noted on the flanks, thighs and upper portions of the arms. The patient states that he has taken no drugs.

A biopsy specimen taken from the center of a large patch on the left flank showed a thin parakeratotic scale, slight acanthosis of the epidermis and a moderate degree of intracellular and intercellular edema. In some areas small vesicles were formed within the epidermis and beneath the scale; these contained a few lymphocytes. The granular layer was discontinuous. The basal layer was broken in places by the invasion of lymphocytes into the epidermis. The upper part of the corium showed edema and a dense cellular infiltration composed chiefly of lymphocytes with scattered free red corpuscles. Thick mantles of similar infiltration extended downward along the deeper blood vessels.

A biopsy specimen from a more acute lesion on the back showed the same histologic changes in a lesser degree.

DISCUSSION

DR. F. E. SENEAR: I saw this patient several days ago, and I felt sure that some features of the disorder supported the diagnosis of the Juliusberg type of parapsoriasis, and some other features, that of the acute variety. This is the only case I have observed that suggests a link between these two divisions. This patient has many lesions that apparently are papules which on scraping show a thick and dead white scale such as develops in pityriasis lichenoides chronica. He also has some apparently acute lesions, which break down in the center, leaving a little depression which is covered with a crust. That may be due to scratching, but the patient says that the lesions are not pruritic and that he does not scratch them. Some of the lesions are located over the scapula, where it is difficult to get at them, and he would not scratch them unconsciously. I do not know whether the disorder is pityriasis lichenoides chronica or an unusually prolonged pityriasis lichenoides et varioliformis acuta.

DR. WILLIAM ALLEN PUSEY: I think that this is an extremely interesting case of what is perhaps a transitional form between the ordinary pityriasis

lichenoides chronica and an acute type of that disease, a transitional form between the usual chronic type and an acute type. Transitional types between disorders of apparently different order become an important link in establishing the identity of the disorders.

DR. MARCUS R. CARO: I studied the slides in this case, and they corresponded in every way to those obtained in the case of pityriasis lichenoides et varioliformis acuta previously described by Senear and Oliver.

A CASE FOR DIAGNOSIS. Presented by DR. THEODORE CORNBLEET and DR. EARL R. PACE.

This Negro, aged 25, presents a chain of abscesses which apparently follow a lymphatic channel up the right forearm to the arm, in the manner of a sporotrichosis. He states that about six weeks ago he scratched the dorsum of the right index finger at the proximal phalanx and that a pustular lesion which did not heal readily developed at the site of trauma. Two weeks later there developed deep pustules or abscesses on the extensor aspect of the forearm and arm, the remnants of which are present, one being about 4 inches (10 cm.) below the elbow and one 6 inches (15 cm.) above. Shortly afterward there appeared a tender swollen red cellulitis or abscess on the dorsum of the hand adjoining the first lesion, which after two weeks showed no tendency to "point" or rupture. Soon after this an area of similar involvement appeared adjoining the lesion on the forearm. Both of these lesions have involuted.

Cultures and agglutination tests for sporotrichosis and serologic tests for tularemia and syphilis gave negative results. Direct examination for, and inoculations of guinea-pigs with, tubercle bacilli have thus far given negative results. Culture of material from the unruptured deep abscess on the hand showed a nonhemolytic streptococcus.

The results of a biopsy were nonspecific, showing a collection of serum, polymorphonuclears and round cells that had elevated the hyperkeratotic and parakeratotic horny layer. The rete Malpighii was edematous and acanthotic, a mottled infiltration being present in the intracellular spaces. There was increased pigmentation of the basal layer. The papillary zone was edematous with a diffuse infiltrate of round cells and polymorphonuclears, and there was increased vascularity. The collagen fibers were greatly swollen and appeared glossy. Deeper in the cutis were large accumulations of necrotic cellular infiltrate, scattered epithelial cells and large fibroblasts. In some zones the endothelial swelling was marked, intense round cell perivascular infiltration being present.

DISCUSSION

DR. LESTER M. WIEDER, Milwaukee: If one accepts the streptococcus found as being the etiologic factor in this case, the case demonstrates how organisms of different types may produce clinically similar processes. I think that the spread by way of the lymphatics may be somewhat doubtful and that organisms from the original lesion on the hand may have been transferred externally by the patient rather than have been transported by the lymphatics. The fact that there was no fever or visible lymphangitis in a streptococcic process, I think, supports this belief.

DR. WILLIAM ALLEN PUSEY: I wish to congratulate the presenters on their restraint in not convincing themselves that the disorder is sporotrichosis and standing by that diagnosis in spite of everything. I think that this patient exhibits the same sort of reaction as that produced by streptococci of low virulence. I see no reason why the spread could not have occurred by way of the lymphatics.

ERYTHEMA MULTIFORME BULLOSUM. Presented by DR. M. H. EBERT and DR. B. B. BEESON.

This woman, aged 32, had tonsillitis, with chills and fever, eighteen days ago. Eleven days ago rheumatic pains developed in the joints, and a day or two later

an eruption appeared on the backs of her hands. The next day the tonsils were lanced, and since then the eruption has spread rapidly.

When the patient was first seen the face, neck, exposed portion of the chest, backs of the hands and forearms were involved. Two types of lesions were present: (1) coin-sized bluish red edematous elevated plaques with a ring of vesicles at the margins and (2) small dull red flat papules over the back of the hands. There were also some swelling and tenderness of the left wrist.

DISCUSSION

DR. LOUIS A. BRUNSTING, Rochester, Minn.: This disorder is sometimes confused with that presenting the picture of subacute disseminated lupus erythematosus. However, this patient does not appear to be ill. Was there any relationship between the present eruption and the use of drugs?

DR. OLIVER S. ORMSBY: I think that in discussing this question one should bear in mind that in designating this disorder as multiform erythema reference is made not to the real disease multiforme erythema but to a multiforme erythema symptom complex that may be produced by various things, such as drugs, serums, vaccines, infections and similar causes. This patient exhibits a disorder that presents the symptoms of true multiform erythema, but it is not strictly that disease. It is a multiform erythema symptom complex.

DR. M. H. EBERT: I presented this patient for the reason Dr. Ormsby mentioned. When she was first seen many of the lesions were herpes iris. The patches were typically multiform erythema. There is no history of preceding attacks. There is a definite history of chills, fever, sore throat and of one of the tonsils being lanced, which was followed by this eruption. This disorder is symptomatic, but it simulates exactly the idiopathic type of erythema multiforme.

NEW YORK DERMATOLOGICAL SOCIETY

EUGENE F. TRAUB, M.D., *Secretary*

Feb. 25, 1936

RAY H. RULISON, M.D., *President*

A CASE FOR DIAGNOSIS (DERMATITIS MEDICAMENTOSA DUE TO IODIZED SALT? PRURIGO MITIS?). Presented by DR. FRED WISE.

R. G., a boy aged 15 months, born in the United States, was first seen with an eruption involving the exposed portion of the extremities and the face. The mother states that she has used iodized salt for all foods since the birth of the child. The patient had an eruption like the present one four months ago; it lasted for two or three days and was diagnosed by a private physician as chickenpox. About two weeks ago the patient had a severe cold associated with swelling of the glands of the neck and an elevation of temperature; he also had frequent attacks of vomiting.

There are numerous discrete and confluent erythematous papules and papular vesicles varying in size from that of a pinhead to that of a lentil. There are also a number of macular lesions varying in color from light pink to deep red. The lesions are most marked on the forehead and forearms. There is no evidence of pruritus. On the dorsum of the tongue is an oval lesion, about ¾ by ½ inch (1.9 by 1.2 cm.) in size, lying transversely across the anterior portion; it shows a serpiginous elevated edge and depressed center but no evidences of erosion or active inflammation.

DISCUSSION

DR. HENRY H. WHITEHOUSE: The mother says that the baby vomits all food except milk, and there is a history of possible disturbance at the pylorus. I should

think the lesions are probably a toxic eruption. The child takes only 16 ounces (473 cc.) of milk a day and has been vomiting for a long time. Milk produces a toxic rash in some patients. There is no itching whatever. I suggest the diagnosis of toxic erythema.

DR. EDWARD R. MALONEY: I am rather inclined to agree with Dr. Wise's diagnosis of an eruption due to iodide. There is a definite history of the use of iodized salt. The eruption does not look like a papulovesicular urticaria. That condition would not be apt to be limited to the face and forehead. Of course, there are a few lesions on the hands and forearms. It seems to me that if the eruption were due to some toxic condition originating in the gastro-intestinal tract it would be more extensive than it is. With the history of ingestion of iodized salt I can accept the diagnosis of eruption due to iodide.

DR. PAUL E. BECHET: I think the disorder is most probably an iododerma. Of course, the fact that the child is being given iodized salt does not necessarily prove that the eruption is iododerma. There has to be a sensitivity to iodides. However, as far as the appearance of the eruption is concerned, it looks like iododerma. As Dr. Maloney said, the lesions are limited to the face. Papulovesicular urticaria would appear also on the body.

DR. A. BENSON CANNON: I am inclined to agree with Dr. Whitehouse. I see more of the elements of urticaria than I do of those of eruption due to iodide. I suppose the bright red macules are the primary lesions, and I think the other lesions are typical of urticaria. I believe the location on the face, forehead and extensor surfaces of the arms seems more in favor of papular urticaria than of iododerma. I consider the absence of pustules or painful inflammatory lesions such as one would expect to find in an eruption due to iodides unusual.

DR. JOSEPH J. ELLER: I should certainly suspect the possibility of an eruption due to iodide. I have seen eruptions of this type, not pustular but just papular and macular. Iodides can also cause an urticarial type of eruption. I feel that further observation and study are required to determine the etiology.

DR. GEORGE M. MACKEE: The eruption is polymorphous. I should be rather inclined to regard it as erythema multiforme, particularly in view of the history of gastro-intestinal disturbances, but at the same time it is possible for iodine to produce a polymorphous eruption, although such a reaction is uncommon.

DR. EUGENE F. TRAUB: The lesions exhibited by the patient today are erythematous macules and tiny papules capped with vesicles and wheals, that is, a multiform eruption which in the main is papulovesicular. I should say the predominating lesions are similar to those seen in a papulovesicular urticaria. On such a basis, it seems to me the only diagnosis that can be ventured today is the one suggested by Dr. Whitehouse, i. e., that of papulovesicular urticaria. The location of the lesions is not particularly in favor of one condition or another. Certainly from the inspection of the patient the diagnosis of an eruption due to a drug can only be surmised and must be proved.

A CASE FOR DIAGNOSIS (HEMOLYMPHANGIOMA?). Presented by DR. EUGENE F. TRAUB.

A. E., a woman aged 19, presents a lesion anteriorly near the tip of the tongue. It appeared about four or five years ago and has grown gradually to the present size. A rather infiltrated mass measuring from 1.5 to 2 cm. in diameter can be distinctly felt deep in the tongue; on its surface are elevated protuberances, of which some seem to be filled with a transparent liquid substance and others seem to contain blood. Owing to the size of the mass the patient occasionally traumatizes it by biting, and probably for this reason the lesion has varied in size from time to time. In addition to a confirmation of the diagnosis, suggestions for treatment will be welcome.

DISCUSSION

DR. FRED WISE: I agree with the diagnosis. As for treatment, I can suggest only electrodesiccation.

DR. GEORGE M. MACKEE: I agree with the diagnosis and the suggestion of electrocoagulation. A small part should be treated at a time.

DR. JOSEPH J. ELLER: I agree with the last two speakers.

DR. A. BENSON CANNON: I think this lesion is a simple wart which has been traumatized; I advise desiccation.

(DRS. J. FRANK FRASER, HENRY H. WHITEHOUSE and EDWARD R. MALONEY agreed with the diagnosis and the suggestions for treatment.)

A CASE FOR DIAGNOSIS (GRANULOSIS RUBRA NASI?). Presented by DR. FRED WISE.

C. D., a married woman aged 23, born in Lithuania, is presented because of an eruption on the nose of two months' duration. The present eruption was preceded by redness which had existed for four months, making the total duration of the disorder about six months.

The patient believes that an ointment prescribed by a physician was instrumental in causing the present eruption. This preparation was used only once. The patient says that there has been no perspiration or exudation in the region of the eruption.

The bulb of the nose presents an area of closely studded slightly elevated hyperkeratotic papules the size of millet seeds; these are most numerous on the frontal and lateral aspects of the bulbous portion of the nose and are situated on an erythematous base. The rims of the nostrils and the columella nasi are inflamed but show no papular formations.

The patient suffers from excessive perspiration chiefly on the palms and soles. An effort will be made to obtain a section for microscopic study.

DISCUSSION

DR. JOSEPH J. ELLER: I feel that the disorder is some form of tuberculosis of the skin.

DR. A. BENSON CANNON: I feel as Dr. Eller does. I thought there were apple jelly shiny nodules, and they lacked the amount of redness I should expect to find in granulosis rubra nasi. There is no telangiectasia, scaling or hyperhidrosis of the involved area.

DR. PAUL E. BECHET: I examined the involved area rather carefully when I saw the patient in the clinic. I am in favor of the diagnosis of tuberculosis, and I consider the disorder to be either a follicular type of lupus vulgaris or a disseminated lupus vulgaris of the small miliary type. It lacks the redness of granulosis rubra nasi and is dry. The patient told me that she had never observed the pearly droplets so commonly observed in granulosis rubra nasi. The color is brownish copper rather than bright red. Another unusual feature is the extension of the lesions beneath the alae and on the ridge between the two alae. For these reasons I should prefer the diagnosis of tuberculosis to that of granulosis rubra nasi.

DR. HENRY H. WHITEHOUSE: I agree with Dr. Bechet's interpretation. The disorder has not the characteristic redness, and the location is not that of granulosis rubra nasi. There is no moisture, and the patient states that no droplets have been present. The color is more suggestive of some type of tuberculosis.

DR. EUGENE F. TRAUB: The small nodules suggest tiny tubercles to me, and I therefore agree with the members who believe that the disorder is tuberculosis of the skin.

DR. GEORGE M. MACKEE: I agree with Dr. Wise that the disorder presents most of the features of granulosis rubra nasi. Hyperhidrosis is absent. Other features seen in some cases of granulosis rubra nasi are lacking, vesiculation, for instance. The scale and the tiny nodules suggest some form of tuberculosis, and in this case tuberculosis must be ruled out before the diagnosis of granulosis rubra nasi can be accepted.

DR. FRED WISE: One feature against the diagnosis of a form of lupus is the short duration. The patient was questioned carefully about that, and she said that the eruption began four months ago. As to the other features which have been mentioned against the diagnosis of granulosis rubra nasi, I think with the exception of the absence of the usual droplets of sweat, the morphologic appearance is much in favor of that diagnosis. If the patient will consent to a biopsy I shall report the result at the next meeting.

KERATOSIS PALMARIS ET PLANTARIS AND DERMATOPHYTOSIS. Presented by DR. J. FRANK FRASER.

V. B., a woman aged 20, was first seen on Feb. 15, 1936, because of an eruption on the palms, soles and nails. The patient's parents are second cousins. A brother of the patient has an identical condition of the palms and soles; he presents a sharply marginated eruption on the back of the hands.

There is marked thickening of the skin of the palms and soles which appears yellowish and exhibits some deep fissures and some scaling in places. The edge is sharp and slightly elevated. There is an odor to the palms and soles which is "sour" in character. There is much maceration between the toes. The nails show thickening, transverse ridging and clawlike convexity. There is an olive-sized nodule on each internal and external malleolus of both ankles.

Smears for mycelia were made; those from the right sole gave positive results and those from the left sole and the nails gave negative results.

DISCUSSION

DR. HENRY H. WHITEHOUSE: I agree with the diagnosis.

DR. GEORGE M. MACKEE: There are some unusual features. The eruption on the back of the hands with sharp margins above in the brother, the lesions on the forearms in both patients, the patches of erythema and exfoliation in the young woman and the familial tendency and consanguinity point to mal de Meleda.

DR. FRED WISE: I think these lesions are examples of mal de Meleda. Among the inhabitants of Meleda, an island in the Adriatic Sea, there have been marriages of related persons for many years; it is believed that the progeny of these marriages are susceptible to this peculiar form of keratoderma.

DR. J. FRANK FRASER: The features of hyperkeratotic lesions on the dorsum of the wrist sometimes extending to the elbows have been reported.

PITYRIASIS RUBRA PILARIS. Presented by DR. A. BENSON CANNON.

A. S., a man aged 40, was admitted to the City Hospital in July 1935 because of a generalized eruption that had been present for one year. The rash began on the nose, rapidly spreading over the entire face, scalp and most of the trunk. There were no constitutional symptoms. Slight itching and burning of the skin were present. There was no history of sunburn. The eruption gradually spread over the extensor surfaces of the extremities and became especially marked on the elbows, backs of the fingers and toes. A diagnosis of lupus erythematosus disseminatus had been made at another hospital, and the patient was given several injections of gold sodium thiosulfate and local application of tar, but no improvement resulted. The family and past history are irrelevant.

In the aforementioned locations, most marked in the extensor surfaces and on the face, neck and scalp, are bright brownish red to dark red slightly thickened plaques covering the whole part of the body with adherent grayish scales. Between and on the scapular regions are pinhead-sized, red follicular papules containing horny scales that are adherent to the follicles. When the hand is passed over the surface the skin gives a nutmeg grater sensation. The scaly lesions on the elbows somewhat resemble psoriasis. The nails are thin, striated and stippled and have a distinct dry thickened scaling. On the left side of the mucous membranes of

the mouth along the line of the teeth and at the left corner is a red, glazed area with a whitish, thickened border that strikingly resembles lichen planus. A similar area is present opposite the left molar teeth on the right cheek.

Roentgenograms of the mediastinum and chest showed slight thickening of the pleura at the apex of the right lung. The base of the left lung showed evidence of infiltration, fibrosis and calcification, changes suggestive of localized interstitial pneumonia with fibrotic changes predominating.

The sinuses were normal. The Wassermann test and chemical examination of the blood gave negative results. Four different biopsies were made, all of which showed probable pityriasis rubra pilaris.

Treatment has consisted of eight weekly intravenous injections of typhoid vaccines, application of 10 per cent solution of salicylic acid in oil locally, intravenous administration of calcium thiosulfate and sodium bicarbonate baths since admission to the hospital. Improvement has been pronounced, all the lesions except those on the face and neck and on a few nails and a slight involvement on the elbows having disappeared.

DISCUSSION

DR. EDWARD R. MALONEY: I am willing to accept Dr. Cannon's diagnosis in this case because he has observed the condition for a long while, has studied it and has made several biopsies and histologic studies. He has come to definite conclusions as to what the disorder is. In my opinion it shows many of the elements of lichen planus. Many of the lesions look like lesions of lichen planus, and the condition of the mucous membranes of the mouth strongly suggests that disease. However, because of the fact that Dr. Fraser has again examined the section and says the disease cannot be lichen planus, I am willing to accept Dr. Cannon's diagnosis.

DR. JOSEPH J. ELLER: I agree with Dr. Cannon's interpretation.

DR. GEORGE M. MACKEE: There is nothing particularly characteristic about the histologic picture or pityriasis rubra pilaris, but it does have certain histologic characteristics, and one can make a diagnosis by exclusion if one studies the patient clinically. This section does not show lichen planus or psoriasis and it does have features of pityriasis rubra pilaris. All that can be seen now is what is left of the eruption. There are still some lesions of pityriasis rubra pilaris on the scalp and face. I agree, therefore, with the diagnosis. The lesion in the mouth is interesting. I have been told that one can have white patches in the mouth due to pityriasis rubra pilaris, but I have never seen a patient who exhibited such patches, and I do not recall any bona fide reports in the literature. I think one must at least consider the possibility that the lesion in the mouth is leukoplakia and not pityriasis rubra pilaris.

DR. FRED WISE: With reference to the last remark made by Dr. MacKee, Jadassohn's Handbook has an illustration of lesions in the mouth in a case of pityriasis rubra pilaris. Probably one does not look in the mouth often enough. This case demonstrates how difficult it is at times to make a clinical diagnosis. A year ago I was called to see this man. He had a severe dermatitis and looked as though he were riddled with poison ivy. His was a compensation case, and I made a report to the authorities of dermatitis venenata, which I attributed to topical treatment. He had no more evidence of pityriasis rubra pilaris at that time than he had of leprosy. I think that at the present time the diagnosis of pityriasis rubra pilaris should be accepted. The histologic and clinical appearances, if not typical, are at least suggestive of that disease.

DR. EUGENE F. TRAUB: One feature which has not been particularly mentioned is the pitting of the nails together with certain other features of nail structure usually seen in cases of psoriasis. There is probably little doubt that this pitting or stippling of the nails may occur in many other diseases and that it is not at all pathognomonic of psoriasis. In addition to exhibiting the tiny pits, a number of the nails were thickened and showed what seemed to be a hyperkeratosis underneath the nail plate.

DR. J. FRANK FRASER: What I said about lichen planus in describing the microscopic picture also applies to psoriasis. There are no features of psoriasis. Pitting of the nails is not pathognomonic.

DR. HENRY H. WHITEHOUSE: I accept the diagnosis of pityriasis rubra pilaris, but in my experience this is an atypical case. Patients with pityriasis rubra pilaris have lesions in the mouth but this patient has none of the plugged follicles on the back of the fingers. In all the cases of that disease which I have observed the manifestations, have been practically alike, consisting of diffuse large areas over the body. The histologic picture and the unusual lesions in the mouth do not conform to the manifestations I have seen in the past, and I have seen quite a number of cases of pityriasis rubra pilaris. I am willing to accept the diagnosis with the reservation that this is an atypical form which I have not seen before.

DR. GEORGE M. MACKEE: I wish to ask Dr. Cannon whether during his observation of the patient he has noticed any of the typical sharply demarcated patches seen in pityriasis rubra pilaris.

DR. A. BENSON CANNON: This man has never had any of the typical follicles on the backs of the fingers or on the back of the neck. As to the other question, the sharply demarcated areas were characteristically present, and I have photographs showing them, which, I regret, were not brought with the chart. On the margins of the patches one always finds follicular patches with scaling. The big plaques on the neck have all started as minute follicular papules the size of a pinhead, and what is seen today is due to the coalescence of these papules. I must admit that the appearance is so changed that it would be difficult to make a diagnosis, as Dr. Whitehouse has said. This modification in the appearance of the eruption has been brought about, I think, by the salicylic acid used on the skin. I should be glad to present this patient again later if the members wish it.

FOLLICULITIS DECALVANS ASSOCIATED WITH KERATOSIS PILARIS OF THE TRUNK. Presented by DR. FRED WISE.

W. B., a salesman aged 47, born in Hungary, was first seen on Feb. 25, 1936, with an eruption of five months' duration involving the scalp, trunk and extremities. The patient states that the eruption was first noticed in October after he had been exposed daily to the rays of the sun at the seashore during the summer.

There is an irregular elongated scar on the vertex of the scalp resulting from a blow that the patient received in early childhood. There had been a patch of alopecia measuring about 1 inch (2.5 cm.) in diameter in the area of the scar. During the past five months, however, the patient has noticed that the hair has been falling considerably from the frontal, lateral and temporal regions. The scalp is dull red and atrophic. There is a similar alopecia associated with atrophy involving both temporal areas. Scattered over the back, chest and thighs and involving the arms are numerous discrete follicular papules with keratotic spines. The lesions are most pronounced on the forearms, simulating a lichen spinulosus. On the middle portion of the abdomen there is a cluster of waxy white atrophic macules resembling white spot disease. On the upper and middle area of the back are numerous slightly depressed, follicular macules having the appearance of purplish and violaceous atrophic scars.

DISCUSSION

DR. GEORGE M. MACKEE: I agree with the diagnosis. The disorder represents an interesting combination which is occasionally seen. I was particularly interested in the bluish marks, which are numerous. I think that they are atrophic areas, possibly the end-results of grouped follicular lesions. When keratosis pilaris disappears it often leaves atrophy. The bluish color may be caused by a change in the refractive index. They are not vascular lesions.

DR. J. FRANK FRASER: I agree with the diagnosis.

DR. EUGENE F. TRAUB: I agree with Dr. MacKee's statement about the atrophy. On careful inspection it is apparent that each affected hair follicle has

disappeared, leaving a tiny pitted scar or thin atrophic area. It does not seem that a group of tiny lesions caused this change but rather that it followed the destruction of a single follicle. Because of the atrophy and thinning of the skin a bluish tint is imparted to the area, and it is this change in color which suggests a vascular lesion. Part of the history which the patient gave, namely, that some of the atrophy of the scalp occurred when he was a young man, should receive further investigation. This suggests the possibility of a favus infection which may still be active and which could account for the lesions on the scalp as readily as could folliculitis decalvans. The process seems to be still active, and it is barely possible that the pitted lesions on the body may also be accounted for on the basis of favus. Certainly there is a much more extensive and destructive eruption about the hair follicles than one is accustomed to see ordinarily.

DR. FRED WISE: This man was a patient of Dr. Rein. Two biopsy specimens were taken, one from an atrophic area and another from an area that looked like scleroderma. I shall report on the two biopsies and on the microscopic examination of the scalp at the next meeting.

A CASE FOR DIAGNOSIS (ERYTHEMA NODOSUM?). Presented by DR. J. FRANK FRASER.

A. McD., a woman aged 45, has had Hodgkin's disease for three years. At present there are large erythematous nodules on the posterior aspects of both legs; these have been present for the past three months.

DISCUSSION

DR. HENRY H. WHITEHOUSE: These lesions, which appear, remain about two weeks and then clear up while others keep forming, conform to those seen in erythema nodosum. I do not think that this disorder is associated with Hodgkin's disease.

DR. EDWARD R. MALONEY: Dr. Fraser wishes a definite answer in this case. I think it is possible to make a definite diagnosis. It seems to me that the disorder is erythema nodosum. The patient states that she had pains in the joints for some weeks. These lesions appear, last for a time and then clear up, others appearing.

DR. GEORGE M. MACKEE: I agree with the diagnosis of erythema nodosum. However, one must realize that exactly the same kind of lesions can be caused by the iodides.

DR. FRED WISE: I agree with Dr. MacKee.

DR. EUGENE F. TRAUB: The location, clinical course and character of the lesions suggest the diagnosis of erythema nodosum, but, of course, the question as to whether the eruption is due to a drug cannot be settled by inspection of the patient.

DR. J. FRANK FRASER: My tentative diagnosis was erythema nodosum, but there were some features against that condition. Erythema nodosum usually runs a course of five or six weeks and then clears up, and usually there is no history of recurrences. In this case the lesions clear up and recur.

DR. FRED WISE: What medicine has the patient taken for Hodgkin's disease?

DR. J. FRANK FRASER: She has received roentgen therapy but no internal medication so far as I know.

A CASE FOR DIAGNOSIS (RECURRING ACUTE LUPUS ERYTHEMATOSUS?). Presented by DR. PAUL E. BECHET.

S. B., a woman aged 32, is presented with the following history: For ten years she has had at intervals a sharply outlined, slightly scaly, somewhat reddened patch with prominent follicular openings limited to the flush area of the

left side of the face. There are also a small atrophic scaly patch in the concha of the right ear and a similar lesion on the left eyebrow.

DISCUSSION

DR. EUGENE F. TRAUB: This patient presents a number of slightly infiltrated patches elevated above the surrounding skin. I refer particularly to the patch on the nose and eyebrow. In addition, she has what seems to be a diffuse dermatitis of the left cheek. I did not see any marked scaling, atrophy or telangiectasia. In other words, the patient shows nothing at present on which a diagnosis of lupus erythematosus could be based, nor does the suggestion that the disorder may be an eruption due to a drug seem likely from the appearance of the lesions, even though the patient states that she has taken ex-lax or feenamint. It seems that the condition fits in best with a dermatitis of external origin.

DR. J. FRANK FRASER: I am inclined to agree with Dr. Traub. Early phases of lupus erythematosus do not necessarily show either atrophy or scaling. In the early stages one observes nothing but erythema, which may resemble erythema multiforme.

DR. HENRY H. WHITEHOUSE: I do not see any evidence of lupus erythematosus in this eruption, which has shown exacerbations and remissions over a period of ten years. It does not have the clinical appearance of lupus erythematosus. Whether it is erythema multiforme or not, I do not know.

DR. EDWARD R. MALONEY: It seems to me that the history that this eruption has lasted for ten years rules out the possibility of its being an early stage of lupus erythematosus, if it is lupus erythematosus at all. I think there is some thickening in the lesion now present on the nose, and this, with the history of lesions appearing and regressing for ten years makes me suspect sarcoid and makes me think that the other lesions were also sarcoid.

DR. A. BENSON CANNON: I think this case illustrates what varied manifestations a disease like lupus erythematosus can exhibit in ten years. Certainly I agree with the other speakers that the present appearance does not suggest lupus erythematosus unless it is the Leloir type of sarcoid. If Dr. Bechet has had the opportunity of studying the case for a long time I am inclined to accept his diagnosis of lupus erythematosus. It is known that lupus erythematosus can disappear without scarring; hence the lack of scarring does not mean that the patient has not had lupus erythematosus.

DR. GEORGE M. MACKEE: I have seen lupus erythematosus appear and regress on the face for years without causing any perceptible permanent disfigurement. I have seen other eruptions do the same thing for a number of years and eventually develop into the regular discoid type of lupus erythematosus. As I recall it, Dr. Bechet did not present this patient with the diagnosis of lupus erythematosus but said the disorder might be that. I agree that it might be. It might also be something else. Also, if I remember correctly, he saw the patient for the first time a few days ago.

DR. PAUL E. BECHET: I appreciate Dr. Cannon's statement about my long observation of this case, but he apparently did not hear me correctly. My observation has been limited to approximately five minutes, as I saw the patient for the first time this afternoon. I present her for that reason, as I wish to elicit discussion based on purely objective symptoms. I present her with a possible diagnosis of lupus erythematosus, not of an early stage of lupus erythematosus, but of a superficial type of recurrent lupus erythematosus. She has a sharply outlined, reddened lesion limited to one side of the face, with scaling and prominent follicular openings and some exceedingly superficial atrophy. She dyes her hair, but there is no dermatitis elsewhere on the face, so the dye has nothing to do with the disorder. She has an atrophic spot typical of lupus erythematosus, in the concha of the ear, and in the daylight one can also see some atrophy in the eyebrow. As Dr. MacKee has said, a disorder of this type may appear and disappear over a period of years; I also have observed that occasionally. This woman is nervous, and

I do not lay much stress on the history of ten years' duration. Certainly, the sharply outlined lesion located on the nose, which sometimes disappears in several weeks and sometimes does not disappear for several months, fits in with manifestations in other cases I have observed in which the disorder eventually developed into a typical discoid lupus erythematosus.

REPORT ON A CASE OF ULCER OF THE THORACIC WALL. By DR. JOSEPH J. ELLER.

C. B., a man aged 29, was presented before this society on Oct. 22, 1935 (ARCH. DERMAT. & SYPH. **34**:506 [Sept.] 1936).

This patient was sent to Dr. Meleney at the Presbyterian Hospital on the suggestion that the ulceration was possibly due to a streptococcic infection. He was treated locally with a suspension of zinc peroxide and has improved about 95 per cent without having received any antisyphilitic treatment. Dr. Meleney feels definitely that this patient has an infection with a micro-aerophilic hemolytic streptococcus and that the positive Wassermann reaction is incidental.

For further information, I refer the members to an article by Dr. Meleney (Zinc Peroxide in the Treatment of Micro-Aërophilic and Anaerobic Infections, *Ann. Surg.* **101**:997 [April] 1935).

CLEVELAND DERMATOLOGICAL SOCIETY

J. R. DRIVER, M.D., *Reporter*

Feb. 27, 1936

H. G. MISKJIAN, M.D., *Presiding*

SYPHILITIC AMYOTROPHY. Presented by DR. G. W. BINKLEY.

CASE 1.—W. E., a Negro aged 34, from the service of Dr. Cole and Dr. Driver at the City Hospital, for the past three years has noticed weakness in walking and standing, especially when his eyes are closed. The primary syphilitic infection occurred in 1917, and since that time the patient has received several courses of treatment. When he was first examined, about one year ago, the following observations were recorded: generalized fibrillary twitchings, absence of ankle jerks, sluggishness of knee kicks, absence of vibratory sensation in the legs, impairment of sense of position, extreme ataxia with a positive Romberg sign and muscular weakness of the lower extremities. There was no sensory impairment. The Wassermann reaction of the blood was 4 plus; examination of the spinal fluid gave negative results. The diagnosis at that time was questionable tabes dorsalis, with possible amyotrophic lateral sclerosis. The patient was given intensive treatment with heavy metals, and malaria therapy was attempted but was unsuccessful. He did, however, have a number of chills produced artificially by typhoid vaccine. In 1935 he was given five treatments with the Kettering hypertherm. All the treatment has been to no avail, and, if anything, the patient is somewhat worse.

There are (1) slight weakness in both sternocleidomastoid muscles; (2) a rather coarse tremor of the tongue; (3) moderate weakness of the deltoid, biceps and triceps muscles and the muscles of respiration bilaterally, of the abdominal muscles and of the quadriceps muscles of both thighs; (4) extreme weakness and atrophy of the flexor, extensor and small muscles of the hands, the muscles of the anterior tibial group and the small muscles of the feet; (5) fine twitchings in the small muscles of the hands, forearms and lower third of the arms and coarse twitchings in the muscles of the thighs; (6) marked ataxia of both upper and lower extrem-

ities with definite impairment of position and vibration sense; (7) hypesthesia to pinprick in both feet, gradually fading out toward the knees, and (8) absence of all reflexes in both lower and upper extremities, with the possible exception that the biceps and the triceps reflex on the right are present but sluggish.

CASE 2.—H. M., a man aged 46, from the service of Dr. Cole and Dr. Driver at the City Hospital, first noticed weakness of the hands and arms about two years ago. He does not recall having had any pain. However, at present he has occasional attacks of "cramps" in each hand. There are rather marked atrophy and extreme weakness of the extensor muscles of the forearms and of the flexor and small muscles of the hands. At times a few fibrillary twitchings can be seen on the inner aspect of both arms, and more or less constant twitchings are noted in the pectoral and interscapular muscles bilaterally. The reflexes in the upper extremities are moderately exaggerated on each side. The lower extremities reveal no abnormality in muscle power or in reflexes. The sensory system is apparently normal throughout. The Wassermann reaction of the blood was 4 plus. Examination of the spinal fluid showed a 4 plus Wassermann reaction, a plus-minus Pandy reaction, 2 cells and a mastic reading of 1231000000.

DISCUSSION

DR. GUY WILLIAMS: It is my opinion, and also that of the members of the neurologic staff of the City Hospital, that the patient in case 1 presents an atypical picture of syphilis of the spinal cord, there being signs of involvement of the posterior columns, dorsolateral columns and anterior horn cells and patchy involvement of the sensory tracts. The disorder could not be classified as a true syphilitic amyotrophy because of the extensive involvement of the cord. However, we believe that case 2 is probably one of a true so-called syphilitic amyotrophy.

Three different theories are now proposed to explain the pathologic changes observed in syphilitic amyotrophy. The most popular conception at present is that the muscular atrophy is chiefly due to a meningovascular inflammatory disease of the ventral roots. This belief is substantiated by the fact that meningitis, perivascular infiltration and arteritis are commonly found in the cord at autopsy. The second theory was advanced by Dejerine many years ago; he stated that syphilitic amyotrophy was due to a peripheral neuritis. He was able to demonstrate neuritis in nine cases in which histologic studies were made. These studies revealed rather mild involvement in the nerves adjacent to the cord but showed an increasing severity as examination progressed distally. Several objections have been raised to this theory; some observers have argued (1) that most often the muscular atrophy is not so distributed as to be explained by a peripheral nerve lesion, and (2) that sensory changes are rare and that when they do occur they are not always referable to the segmental distribution of motor involvement. The third theory advances the belief that the condition is a syphilitic toxic anterior poliomyelitis involving only the ventral horn cells. This is disproved by the fact that in the cases cited there was a definite meningovascular inflammatory process in addition to the disease of the ventral horn cells.

The best pathologic description is probably that given by Martin (*Brain* **48**:153, 1925), who described two cases of syphilitic meningomyelitis. In both cases he found leptomeningitis, marginal degeneration of the white matter of the cord, severe destruction of the ventral horn cells, arteritis and perivascular infiltration of the meningeal and intraspinal vessels. He concluded from his clinical and pathologic studies that the destructive influence reaches the nervous tissue mainly by diffusion and infiltration from the surface of the cord, the lymph channels serving as the mode of travel.

In making a diagnosis of syphilitic amyotrophy several disorders must be ruled out. 1. An old anterior poliomyelitis must be considered, but this can be fairly easily established by obtaining the history of the acute form of the disease at an earlier date and also possibly by obtaining a negative Wassermann reaction of the blood and spinal fluid. 2. Syringomyelia must be considered, for that too

produces muscular atrophy at times. However, in nearly all cases of this disorder there is some dissociation of sensation and some trophic disturbance is present or has occurred at one time or another. 3. Tumor of the cervical portion of the cord must be borne in mind, but this diagnosis can usually be established by noting any changes in the spinal fluid hydrodynamics, and possibly motor or sensory changes below the level of the tumor. 4. Cervical pachymeningitis hypotrophica may be eliminated for it too often produces changes in the spinal fluid hydrodynamics and produces root pains and corresponding sensory losses. 5. A more puzzling entity to differentiate is idiopathic progressive muscular atrophy. In cases of this disorder one occasionally sees a familial type, which can be differentiated by history of previous involvement in some other member of the family. In the most common type, namely the spinal form of Aran and Duchenne, the atrophy begins in the small muscles of the hand, especially in the interossei. Eventually the disease progresses upward to the arm and shoulder girdle, and it is not uncommon to see contractures develop in the muscles which have been involved for some time. This type of muscular atrophy is accompanied by fibrillary twitchings which are fine, rapid and flickering in contrast to the coarse and less frequent twitchings of syphilitic amyotrophy. The atrophy progresses perhaps somewhat slower in the former disorder than in the latter. Bulbar involvement is perhaps more common in cases of idiopathic progressive muscular atrophy than in those of syphilitic amyotrophy. Examination of the spinal fluid also aids in the differentiation of these diseases, since in syphilitic meningomyelitis the Wassermann reaction is usually positive and the cells are usually increased while these changes are generally not present in idiopathic progressive muscular atrophy. 6. Another disease, namely, amyotrophic lateral sclerosis, presents a rather large hurdle in the differential diagnosis. Probably the most outstanding feature is the marked muscular wasting with a resultant spastic paraplegia in the legs, increased muscle tone, exaggeration of deep reflexes and absence of superficial reflexes and extensor plantar responses. Bulbar involvement is a fairly common observation in this disorder but, as stated, is rare in syphilitic amyotrophy.

Vigorous antisyphilitic treatment should be attempted in all cases of syphilitic amyotrophy unless there are some contraindications. The results of treatment have not been truly satisfactory in the past, and many workers have reported that in too many instances the disease progresses even in the face of rather intense antisyphilitic therapy. Mackay and Hall (*Arch. Neurol. & Psychiat.* **29**:241 [Feb.] 1933) expressed the opinion that vigorous and adequate antisyphilitic treatment can do no harm and may in many cases do much good. They suggested that when a reasonable suspicion exists as to syphilitic etiology active treatment should be instituted with a judicious combination of arsenic, bismuth, mercury and fever therapy.

DR. H. N. COLE: My co-workers and I are much indebted to Dr. Williams for this clear and interesting discussion of a rare syphilitic disease. The fact that within a short time three patients with symptoms suggesting this malady have been presented before the society indicates the value for all dermatosyphologists of being at least well acquainted with it.

GENERALIZED SYRINGOMA. Presented by DR. L. J. CARSON.

Mrs. R. H., aged 20, states that her eruption has been present since childhood. There are no subjective symptoms. The skin over the entire body, with the exception of that of the face, is studded with numerous pinhead-sized and somewhat larger papules, some of which are the normal color of the skin while some of those on the neck and arms are slightly yellowish.

A biopsy was reported on as follows: The section was covered with a uniform layer of squamous epithelium. The stratum corneum was of average appearance. The stratum germativum showed nothing significant. The papillae were normal. The corium in one area contained several small cystlike spaces lined by a flattened epithelium. The hair follicle and adjacent sebaceous gland within the dermis

showed nothing significant. The presence in one of the sections of three small cystic areas and also the presence of epithelial strands was consistent with syringocystadenoma.

A CASE FOR DIAGNOSIS. Presented by DR. H. G. MISKJIAN.

J. K., a man aged 40, whose general health has always been good, complains of an eruption which has been present for twenty years. During that time the disorder has varied in intensity, but it has never entirely disappeared. There are no subjective symptoms aside from discomfort produced by the presence of nodules in the skin when they become crusted. There is no pruritus. The eruption is nodular, fairly symmetrical and generalized. There are approximately forty to fifty lesions in various stages of development. The lesions start as small sharply defined red areas which gradually become raised above the surface and develop into red hemispherical nodules, the average size of which is that of a split pea. A little later the lesions become covered with a whitish or slightly yellowish scaly crust. Removal of these crusts lays bare a superficial moist erosion. There has never been any pus present. After this stage the lesions become flatter—undergoing progressive regression—and disappear, leaving in their place brownish red macules with a slight degree of atrophy. There is no inflammatory areola around any of the lesions. The length of time required for the development and regression of a single lesion is approximately from four to six weeks. The Wassermann reaction of the blood was negative. The blood counts were normal. Routine urinalysis showed no abnormalities.

A specimen taken for biopsy was examined by Dr. D. L. Satenstein, of New York, who reported the observations as follows: throughout the cutis were numerous focal cellular areas which, in places, had fused to form larger areas. In these cellular masses one could see a reticulum, in the meshes of which were polymorphonuclears, eosinophils and small round cells. The cutis presented a marked interstitial edema. The epidermis did not show any noteworthy changes. The diagnosis was a reticulo-endothelial process which is sometimes associated with an eruption due to iodine.

Treatment has consisted of roentgen therapy to the individual nodules but has not produced any appreciable change.

DISCUSSION

DR. H. J. PARKHURST, Toledo, Ohio: The eruption is not definitely characteristic of any condition with which I am familiar. The nearest approach to a diagnosis I can make is that this may possibly be a lichenoid form of parapsoriasis.

DR. E. GILLESPIE, Canton, Ohio: I believe that this patient has parapsoriasis of the acute varioliform type. The chronicity of the disease and the scarring and exacerbations as well as the atrophy resulting in depigmentation indicate this diagnosis.

DR. E. W. NETHERTON: Examination of the individual lesions gives one the impression of a granulomatous disease. The process is rather deep, and the lesions are infiltrative. The clinical picture suggests to me that the disorder may be tuberculosis of a blood-borne type. When the lesions regress there is definite scarring. Examination of the biopsy specimen, however, fails to reveal any giant cells, and the large number of eosinophils present confuses the picture. In spite of this, I favor a diagnosis of tuberculosis.

DR. H. N. COLE: On first inspection I favored the diagnosis of a varioliform type of parapsoriasis. However, on clinical examination, the deep involvement of the cutis, shown also by the biopsy specimen, surely places the disorder in the group of granulomas, and I agree with Dr. Netherton that it is probably tuberculosis, probably a papulonecrotic tuberculid. The chronicity over a period of twenty years in a person who is apparently in good health is most unusual.

DR. J. R. DRIVER: The case is interesting, and further studies, particularly inoculation of guinea-pigs, should be carried out.

DR. H. G. MISKJIAN: I have been much interested in the case but have been unable to arrive at a positive diagnosis. A number of pathologists have examined the tissue and been unable to make a definite diagnosis.

BRONX DERMATOLOGICAL SOCIETY

HENRY SILVER, M.D., *Secretary*

Feb. 27, 1936

EUGENE F. KELLEY, M.D., *President*

BESNIER'S PRURIGO; PSYCHONEUROSIS AND ANXIETY HYSTERIA. Presented by DR. MARION B. SULZBERGER for DR. HANS FIELD and DR. HAROLD KELMAN.

M. A., a truck driver aged 29, born in the United States, states that his cutaneous disorder developed in January 1933. Six months before the onset of the eruption the patient became nervous, "hysterical" and "worrisome" and sobbed frequently. Suddenly, overnight an itching eruption appeared in the form of "little pimples"; within one week it spread over the entire body. From January 1933 to March 1934 the patient was treated at various institutions. The report from the Vanderbilt Clinic, dated January 1933, is as follows: The diagnoses were generalized dermatitis and slight dermatophytosis of the feet. The patient was admitted four times in the following one and one-half years. At each admission the eruption was more widespread, and it either cleared or was much improved before discharge. All cutaneous tests gave negative results except one, that with an insecticide used in the patient's home. That was markedly positive.

From May 5 to May 23, 1933, the patient was treated at the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital. The diagnoses made there were dermatitis venenata and generalized eczema pruriginosum.

From Sept. 22 to Oct. 13, 1933, he was at the Mount Sinai Hospital. The report from that hospital reads as follows: There is a past history of emotional imbalance. The diagnoses were: conversion hysteria, prurigo and neurodermatitis (?). In June and in December 1933 the patient also consulted Dr. Ormsby in Chicago and frequented the Essex Street Dispensary in New York.

The first period of hospitalization at the Montefiore Hospital was from Nov. 29, 1934, to May 3, 1935. The diagnosis on admission, made by Dr. Fred Wise, was: generalized eczema of the Besnier prurigo type. The condition involved practically the entire surface of the body except the palms and soles. The skin throughout was dry and thickened, showing eczematous changes of various degrees, scaling, crusting and innumerable excoriations and scratch marks due to permanent itching. The finger-nails looked as if they had been polished. There was a tendency to vesiculation. There was marked lichenification of the neck. The extremities, especially the extensor surfaces and the hands, seemed to be more involved than the trunk. The primary lesions appeared to be flat urticarial papular slightly red infiltrations, varying in size from that of a pinhead to that of a pea. Lymphadenitis of the accessible lymph nodes was especially evident in the inguinal regions. An itching sensation usually preceded the appearance of the cutaneous lesions by from fifteen to thirty minutes. The patient claimed that he could produce the lesions by rubbing the skin. Otherwise the physical examination gave essentially negative results. The eruption cleared up nearly completely during the period of hospitalization.

The patient was readmitted on June 17, 1935, remaining at the hospital until Sept. 4, 1935. There was a recurrence. The clinical picture was the same. The third admission was on Oct. 15, 1935. Again there was a recurrence. The clinical picture was the same. Laboratory studies, including chemical examination of the

blood, urinalyses and serologic tests for syphilis, gave negative results. At the first admission, in November 1934, the blood count showed 60 per cent hemoglobin, 3,760,000 red cells and 22,800 white cells. On Dec. 6, 1934, it showed 84 per cent hemoglobin, 4,950,000 red cells and 8,900 white cells, and there was a slight lymphocytosis. The sedimentation rate—17 mm. in thirty minutes—was increased. The eosinophil count varied from 4 to 28 per cent. The results of numerous scratch, patch and intradermal tests were inconclusive. There were only slight positive reactions to beef, pork, barley, tea, coffee, dust and silk. The reaction to a patch test with oil was negative. The treatment consisted of topical applications, starch baths, application of antipruritic remedies, injections of sodium arsenate and arsphenamine, administration of dilute hydrochloric acid by mouth and of peptones and sedatives and ultraviolet and roentgen irradiation.

At present the patient's skin is again clear, except on the lateral aspects of the trunk and the arms, hips, sacral region and lower extremities, where there are diffusely scattered, pruriginous, urticarial papules as described; the lateral aspects of the trunk are more involved than the middle portions. The course of the disease is characterized by marked improvement during hospitalization and recurrences occurring mostly outside of the hospital, though minor ones appear also when the patient is hospitalized. At each hospitalization the disorder seemed to have become more stubborn and resistant to therapy, subsiding more slowly than on previous admissions, irrespective of diet, changes in habits and milieu and variable types of therapy.

DISCUSSION

DR. HANS FIELD (by invitation): Clinically it will be agreed that the condition of this patient belongs to the prurigo group. It is characterized by frequent recurrences. Observation for a long period shows that major recurrences occur chiefly while the patient is not hospitalized; minor ones, however, do appear during periods of hospitalization. Sensitization tests gave either negative or inconclusive results. While he was in the hospital the patient was kept on an elimination diet and was in a room by himself in order to rule out contact with unknown antigens, but no improvement was noted. In view of this a psychogenic factor had to be considered, and accordingly the patient was sent to Dr. Kelman, a neurologist, for study.

DR. HAROLD KELMAN (by invitation): The patient was submitted to about sixty hours of psychiatric examination. It is important to point out the psychosomatic relationships and to bring attention to the probable rôle of the diencephalon as the coordinating center of the autonomic nervous system. The latter has many experimentally proved peripheral manifestations in the skin, such as sweating, pilomotor phenomena, changes in color and temperature, variations in the size of the capillaries and, associated with the latter, changes in the amounts of blood and fluid constituents of tissue.

The patient's life history and personality as well as his reactions to life situations in and out of the hospital were investigated in detail for a period of over a year. It was shown that he had a severe character neurosis with many anxiety and hysterical symptoms and that he was unable to cope with the problem of marriage, as it implied responsibility, parenthood and masculinity. It became evident that many emotions or situations relating to his wife, regardless of whether he was with her or away from her, caused a recurrence. The most clearly demonstrated example was a severe recurrence of the cutaneous disorder within three hours after the patient left the hospital, while he was on his way to meet his wife.

After pointing out these relationships I should like to indicate that further investigation is necessary to elucidate the reasons why the skin is the site of the reaction to the patient's emotional problems and the mechanism by which this is brought about.

DR. SAMUEL M. PECK: I wish to congratulate the presenters on their work on this interesting case. When psychoneurosis is discussed in relation to cutaneous

diseases the clinical data are so vague that not much real importance can be placed on the data as a support for such an etiologic basis. I think that in this instance the evidence seems so convincing that one must admit that a psychoneurosis is playing an important if not a dominant rôle.

DR. PAUL GROSS: I can appreciate the work done by Dr. Sulzberger and his associates in this case, since the patient was hospitalized several times at the Medical Center. No etiologic factors were ascertained, and a psychogenic origin was finally suspected. I have heard Dr. Kelman mention the arrectores pilorum; this, I think, is interesting as coming from a neurologist. The rôle of the pilomotors in the production of itching is well known to dermatologists.

DR. HAROLD KELMAN (by invitation): I believe I did not say that the patient has a cutaneous disorder because he has a psychoneurosis. I said that he has a cutaneous condition and a psychoneurosis. I also indicated that experimental evidence is accumulating to help establish a relation between the two disorders. However, whether that relation will be established remains to be seen. I might also mention that Stokes, Sachs and Crutchfield include Besnier's prurigo in the group of psychiatric or neurogenous cutaneous disease. I subscribe to the view of Stokes that to rely on unifactoral causation is a fallacy. One must consider a multifactoral cause.

DR. MARION B. SULZBERGER: I wish to disclaim all credit and all blame for anything that Dr. Kelman and Dr. Field have said, because the work on this case has been entirely in their hands. I think one should welcome this sort of work. One hears much discussion of psychoneurotic influences in cutaneous diseases, but there are relatively few descriptions of the actual psychiatric and neurologic findings in large series of cases. The idea of psychoneurologic influences on dermatologic conditions is not new. I think the proof of such influence is hard to bring; and even in this case there is no unequivocal demonstration of the actual part played by the psychoneurosis as a factor in producing this disease. In this case and in almost all cases of similar disorders there are exacerbations and irregular recurrences. However, even if the psychoneurosis is shown to play a great rôle in this case, it cannot be said that other causal factors, such as possible sensitivity, are excluded. Before one can argue cause and effect certain postulates must be fulfilled. I do not think that even one of these postulates has been satisfied in this case. The exacerbations and recurrences that this patient has when he returns home are common, well known to occur in patients with prurigo and infantile eczema. This whole group of dermatoses frequently shows rapid remissions during periods of hospitalization and immediate exacerbations when the patient returns home. It is hard to conceive that this is due to psychic influences in all cases, and it is almost impossible to believe that this explanation could apply to the regular exacerbations seen in some infants only 2 or 3 months of age when they return home. However, to check even this remote possibility, I have had the mothers care for their own babies in the hospital, and I observed that the eruptions cleared up in the hospital even while the babies were subjected to a continuation of the supposed "conflict with the mother" and to all the emotional tensions in the home which may bear on a 3 month old infant. While I think that these cases should be studied as carefully as possible, I must insist that as yet there is no definite proof that psychoneurotic influences are of primary importance in causing any of these exacerbations and still less proof of the importance of such influences in the causation of this group of diseases.

LEPROSY OF MACULAR-ANESTHETIC TYPE COMBINED WITH NODULAR TUBERCULOID LESIONS. Presented by DR. PAUL GROSS.

J. P., a man aged 52, born in Havana, Cuba, has resided in the United States for the past twenty-one years. He is married and has five children, who are all well. About six months ago he began to complain of a nonpruritic widespread eruption. At the same time there developed on the left sole an ulceration which

cleared up in two months as a result of injections of a bismuth preparation and topical applications. A few weeks ago the ulceration recurred.

The eruption consists of slightly scaly faint salmon-red patches of various sizes situated on the forehead and cheeks. There are erythematous plaques the size of a palm on the trunk and thighs and slight edema of the same sites. Some of the lesions show central clearing. There are a few lesions, especially on the left wrist and right elbow, showing bluish red distinct tumor-like infiltration. The ulnar nerves are considerably thickened, the right more so than the left. Acrocyanosis of the hands and feet is present. On the left sole there is a healed ulcer in a callous area. There are a number of pigmented scaly areas on the legs.

The nasal smear was negative for acid-fast bacilli. The Wassermann and Kahn tests of the blood and the urinalysis gave negative results.

A histologic examination by Dr. G. F. Machacek of the sections removed from a nodular lesion showed an atrophic epidermis beneath which was a relatively free zone of corium. The corium proper showed numerous strands and groups of mononuclear cells, many of which were vacuolated. The acute reaction appeared to be slight, although scattered lymphocytes were seen; this reaction was noted about the hair follicles and among the coil glands. Examination of a section removed from a maculo-anesthetic area showed few epidermal changes. A diffuse chronic inflammatory reaction with proliferation of epithelioid cells forming nodules in the region of the hair follicles and about nerve bundles was noted. Large vacuolated cells were also seen in these sections. Sections stained for acid-fast organisms showed bacilli in both specimens. The histologic diagnosis was nodular and macular anesthetic leprosy.

DISCUSSION

DR. DAVID L. SATENSTEIN: The section shows the pathologic picture of leprosy.

DR. MARION B. SULZBERGER: I wish to ask whether the histologic picture is not that of a sarcoid form of leprosy. It seems to me I saw a reticulum with epithelioid cells. Do Dr. Satenstein and Dr. Sachs, who saw the sections, believe that the disorder could be sarcoid leprosy?

DR. WILBERT SACHS: My impression was that the picture of leprosy would also comprise sarcoid forms, except that individual cells vary in leprosy and sarcoid.

DR. FRANK E. CROSS: While I am inclined to favor the diagnosis of leprosy, I think it is a little unusual that bacilli of leprosy were not observed in the nasal smears.

DR. DAVID BLOOM: It is interesting to point out that while the eruption is of seven months' duration, the patient has resided in the United States for the past twenty-one years. This is another instance indicating that the incubation period of leprosy may be quite long.

DR. MARION B. SULZBERGER: I brought up the question whether this was possibly the rare sarcoid type of leprosy because of the difficulty of recovering the bacilli. This difficulty is met both in the sarcoid types of leprosy and in the sarcoid types of tuberculosis. The organisms in sarcoid types of these diseases are as a rule either rapidly destroyed or altered by the allergic conditions of the tissues (Jadassohn-Lewandowsky's law).

DR. PAUL GROSS: I wish to apologize for presenting this patient after such a short time of investigation, but I felt that the clinical evidence was strong enough to establish the diagnosis. The patient was born in Havana, Cuba, where leprosy occurs. He has macular anesthetic lesions and areas of anesthesia on his legs, marked thickening of the ulnar nerves and several nodular lesions. The main reason for showing this patient is the combination of nodular (tuberculoid?) lesions with macular anesthetic leprosy. This combination is considered rare, but it has become evident that a sharp differentiation does not exist in leprosy. The

histologic picture certainly is suggestive of leprosy and rules out mycosis fungoides and other diseases which might be suggested by the clinical picture.

Sections from the same biopsy specimens were stained for acid-fast bacilli by Dr. Machacek, and a considerable number of Hansen bacilli were demonstrated in both the macular and the nodular lesions. This makes the diagnosis of leprosy conclusive and shows again that bacilli of leprosy may be found in macular and tuberculoid leprosy.

A Case for Diagnosis (Bullous Lupus Erythematosus?). Presented by Dr. Theodore Rosenthal.

P. A., a man aged 49, born in Italy, presents an eruption of nine months' duration. It is limited to the frontal region of the scalp and has never entirely cleared up, although there have been times when it appeared much improved. In 1922 he had an abscess of the lung.

On the upper portion of the forehead, on both sides of the hair line, are a number of erythematous maculopapular lesions, closely arranged. Many of these lesions show follicular dilatation, and some appear to be atrophic. Surmounting these individual lesions are large flaccid bullae, which contain a clear serous fluid. There has been no advance in the lesions, and at no time were crusts observed.

The patient has been seen at intervals since October 1935. In November erythematous patches were noticed on the nose and cheek; these soon cleared up. Nine injections of gold sodium thiosulfate produced a temporary improvement followed by a remission. Patch tests with the leather from the hatband were negative. The Wassermann test of the blood was negative.

DISCUSSION

Dr. Theodore Rosenthal: I regret that no bullous lesions are present tonight. However, I have seen this patient at intervals for the past four months, and at these times he always presented some bullae. The patient was treated with a 4 per cent bismuth subnitrate ointment, and whether the condition cleared up because of this or whether the absence of bullae is merely a coincidence I do not know.

Dr. Marion B. Sulzberger: What I saw were fairly sharply outlined serpiginous lesions with pseudo-atrophy and some wrinkling in the center. The eruption did not look like an artefact by reason of the morphologic appearance just mentioned. Furthermore there is some evidence of pigmentation. I think that no one would hesitate to make a probable diagnosis of dermatitis herpetiformis if he saw lesions over the sacrum and there was a history of bullae. There is such a thing as pemphigus localisatus. The eruption may be the beginning of pemphigus.

Dr. Paul Gross: It seems to me that the obvious diagnosis in this case is that of Senear-Usher syndrome. The fact that the condition suggests lupus erythematosus and pemphigus at the same time is in favor of this diagnosis. Bullous lesions in lupus erythematosus are rare, and I have seen them only in the disseminated type originally described by Libman and Sacks.

Dr. Henry Silver: About three months ago Dr. Chargin presented before this society a patient with similar lesions on the forehead, and the same opinions were expressed. It is surprising how often the diagnosis of artefact is substituted because one hesitates to make the diagnosis of bullous lupus erythematosus. The patient presents definite serpiginous lesions that heal without atrophy. These are characteristic features already described in cases of disorders diagnosed as either atypical lupus erythematosus or localized pemphigus. Both are classified as the Senear-Usher syndrome.

Dr. Theodore Rosenthal: I want to bring out the point that this patient had an eruption in one and the same area and always presented bullae at the times when I saw him. He has been a barber for from twenty-five to thirty years, and

this condition is of only nine months' duration, which seems to speak against an occupational dermatitis. I am glad that the question of the Senear-Usher syndrome was brought up. If the disorder is a bullous dermatosis of an unclassified nature which has some of the characteristics of lupus erythematosus at times and at other times appears like an atypical pemphigus, then by exclusion it more or less falls into the Senear-Usher group. That is the most likely diagnosis.

ALOPECIA TOTALIS AND LUPUS ERYTHEMATOSUS. Presented by DR. ADOLPH ROSTENBERG for DR. ADOLPH ROSTENBERG JR.

J. M., a man aged 20, was entirely well until 1931 when a bald spot appeared on the scalp; it extended rapidly, and in two weeks all the hair of the head was lost. Within two weeks more the hair over the entire body had fallen out. At about the same time or shortly thereafter there developed red scaly "scabby" lesions on both cheeks. The lesion on the right cheek has slowly extended until it reached the size of a silver dollar or slightly larger. The one on the left cheek tended to retrogress, and at present only an atrophic area is seen. According to the patient this lesion lasted for about one year. At present the only hairs visible are a few lanugo hairs over the left temporal area which are easily pulled out but appear to be normal microscopically. The family history discloses no evidence of tuberculosis or hairy abnormalities.

The chemical examination of the blood made in 1933 showed that the uric acid, blood sugar, chlorides and cholesterol content and the dextrose tolerance were all within normal limits. The basal metabolic rate was +23.5 per cent. A Mantoux test with a 1:1,000 dilution of tuberculin made recently gave negative results.

DISCUSSION

DR. FRANK E. CROSS: While there may be some connection between the two conditions, it is my impression that the association is a mere coincidence.

DR. ADOLPH ROSTENBERG JR.: The chief interest is the association of the two conditions, which started simultaneously. Shortly before the outbreak the patient was examined after applying for "working papers" and underwent a physical examination. At that time he was pronounced entirely well, and obviously he could not have had an alopecia or a lupus of the face. I obtained his chart from the old Stuyvesant Square Hospital; it was dated about one year after this examination, and at that time he had both conditions. I cannot with any accuracy determine the time of the onset more closely.

A CASE FOR DIAGNOSIS (SARCOID?). Presented by DR. THEODORE ROSENTHAL.

D. Y., a Negro aged 40, born in South Carolina, is receiving antisyphilitic treatment at the clinic of the Department of Health. He had an initial lesion about twenty-one years ago and was treated in the army in 1917 and at the aforenamed clinic in 1934 with six injections of arsphenamine and six injections of a bismuth preparation. The Wassermann reaction on Feb. 9, 1934, was 4 plus. In 1935 he received some additional treatment given by a private physician. On Feb. 20, 1936, the Wassermann reaction of the blood was 4 plus. The cutaneous symptoms appeared for the first time about three years ago as scaling spots on the outer side of the right foot and soon spread to the entire integument. The eruption itches only occasionally. The patient has observed seasonal remissions, and he believes that damp or rainy weather aggravates the disorder. The eruption has never completely disappeared.

There is a generalized eruption which differs in appearance on various areas of the body. On the face and scalp there are large round erythematous scaly plaque-like lesions. There is no alopecia in the involved areas. On the legs are numerous large papulosquamous lesions, with, in many instances, definite micaceous scaling. On the body and trunk are numerous discrete papular lichenoid lesions,

with hardly any scaling. The finger-nails are not involved. There are no lesions on the elbows or knees.

DISCUSSION

DR. MARION B. SULZBERGER: I think the disorder may be a form of atypical sarcoid belonging to the group of atypical tuberculoderms so commonly encountered in Negroes.

DR. CHARLES WOLF: This case is interesting because it is rather difficult to make a diagnosis at the present time. The Wassermann reaction may be negative, but treatment might influence the lesions. It is not common to see psoriatic lesions in late manifestations, and the polymorphous eruption fits in with a late stage of syphilis. I suggest a tentative diagnosis of secondary syphilis in the late stage.

DR. DAVID BLOOM: I am inclined to consider the diagnosis of multiple sarcoids or tuberculosis cutis. Negroes are subject to this type of cutaneous tuberculosis in which the lesions are polymorphous, some suggesting lupus erythematosus and others sarcoid of Boeck or lupus vulgaris.

DR. G. D. ASTRACHAN: This patient presents lesions of two types. The lesions on the forehead and legs are hard, moderately indurated and well defined; in some places they show slight atrophy and could be classified as sarcoid. The lesions on the trunk and upper extremities are polymorphous and in some places present infiltration and heavy crusting; they could be considered as a type of recurrent syphilis. The fact that this man has received antisyphilitic treatment and that these lesions do not respond to treatment does not exclude the possibility of syphilis. Refractory syphilis may be resistant to arsenic, bismuth, mercury and other drugs. The biopsy probably will settle the diagnosis.

DR. THEODORE ROSENTHAL: The lesions from the neck up point to sarcoid. That was my first thought before the patient was stripped. The initial lesion appeared twenty-one years ago, and the patient received a fair amount of therapy. The eruption has been present for about two years during which some antisyphilitic therapy was given, which did not influence the lesions. I think that syphilis can be ruled out. The question of tuberculosis will be checked up further.

A CASE FOR DIAGNOSIS (DERMATITIS HERPETIFORMIS [DUHRING] FOLLOWING SENSITIZATION BY BROMIDES?). Presented by DR. MARION B. SULZBERGER.

Mrs. S. M., aged 44, born in Russia, presents a cutaneous disorder which began sixteen years ago after erysipelas of the face during the course of which bromides were given. The eruption began on the feet and then became generalized; it was accompanied with severe itching. Two years ago a nephropexy was performed. Six months ago the patient suffered from severe pain in the right upper quadrant of the abdomen, icterus and clay-colored stools. She has been treated during the past fifteen years with injections (arsenic?), autohemotherapy and ointments.

The generalized eruption consists of grouped blue-red papules with a central vesicle. These papules are situated on a red base and vary in size from that of a pinhead to that of a pea. There are also many lesions of a more nodular type which carry several central vesicles. There is marked pigmentation in the sites of previously affected areas.

Patch tests gave the following results: with a 50 per cent dilution of compound solution of iodine, U. S. P., a 3 plus reaction; with potassium iodide, a 1 plus reaction; with sodium bromide, triple bromide and sodium chloride, a negative reaction. The intracutaneous test was negative. Intradermal tests for sensitivity to chicken meat, egg white, beef, veal, lamb, rice, wheat and other foods gave positive reactions. Scratch tests with all tested antigens were positive, and tests with pure tenth-normal solution of sodium hydroxide and distilled water produced a wheal and flare. Passive transfer tests were negative.

The basal metabolic rate was +8 per cent. A roentgenogram of the chest showed an infiltration at the apex of the lower lobe of the right lung. The nature of the infiltration cannot be explained at present.

The blood count showed 80 per cent hemoglobin, 4,600,000 red cells and 13,800 white cells. The differential count showed 65 per cent segmented cells, 18 per cent lymphocytes, 11 per cent eosinophils, 2 per cent monocytes, 3 per cent staff cells and 1 per cent basophils. The chemical examination of the blood gave results as follows: chlorides, 636 mg. per hundred cubic centimeters; cholesterol, 216 mg., and cholesterol esters, 161 mg. Examination of the urine showed a specific gravity fixed at 1.014; the reaction for albumin was 2 plus, and in the sediment a few white cells were present. The sedimentation rate was 28 mm. in forty-five minutes.

The treatment has consisted of administration of thyroid, 2 per cent phenol ointment, calcium lactate, calcium gluconate, insulin and one and one-fourth erythema dose of roentgen rays to the entire body.

DISCUSSION

DR. SAMUEL M. PECK: It must be borne in mind that even in generalized neurodermatitis there is often a sensitivity to bromides and iodides manifested both by the ointment test and after ingestion of these drugs. Such information is important when this test is used as a criterion for differential diagnosis between generalized neurodermatitis and atypical Duhring's disease.

DR. FRANK E. CROSS: I think Dr. Sulzberger has brought out an important point. One does not really think of dermatitis herpetiformis in conjunction with foods, but yet one feels that that disorder belongs in the urticarial group. I think that hereafter sensitivity to foods should be considered in the treatment of dermatitis herpetiformis.

DR. MARION B. SULZBERGER: I believe that all the members will agree with the diagnosis. The history is also typical for dermatitis herpetiformis. I do not know whether the ingestion of bromides brought out the dermatitis herpetiformis or whether it would have appeared anyway. Of course it is not a new observation that the ingestion of bromides and iodides brings on attacks of dermatitis herpetiformis in patients with a latent tendency. Another interesting feature in this case is the positive reaction to foods. This is the third instance of such sensitivity that I have observed.

EXFOLIATIVE DERMATITIS FOLLOWING AN ERUPTION DUE TO PHENOLPHTHALEIN IN A PATIENT WITH A SYPHILITIC GLOSSITIS. Presented by DR. ISIDORE M. LASHINSKY.

H. B., a man aged 87, presents an eruption on the palms, thighs and penis of two weeks' duration. On Feb. 12, 1936, the patient bought a "stomach mixture" which was found to contain 1 grain (0.065 Gm.) of phenolphthalein to the teaspoon. The next day he appeared at the clinic of the Mount Sinai Hospital complaining of a pruriginous eruption on the face, trunk and extremities. He presented erythemato-urticarial bluish red lesions which were somewhat elevated and varied in size from that of a pea to that of a coin; they were distributed over the face, body and extremities. On February 27 the palms and thighs became exfoliated. The patient has syphilis of long standing and suffers from a syphilitic glossitis.

The Wassermann reaction of the blood was 4 plus. The blood count showed 80 per cent hemoglobin, 4,620,000 red cells and 10,100 white cells. The differential count showed 73 per cent polymorphonuclears, 24 per cent lymphocytes and 3 per cent monocytes.

DISCUSSION

DR. THEODORE ROSENTHAL: I noticed that the patient's tongue shows a number of superficial eroded papular areas. Is that due to the syphilitic glossitis, or is it part of the reaction to phenolphthalein? If this is due to syphilis I cannot fit it in with the stage of syphilis which the patient is supposed to have. The condition on the tongue has the appearance of a recent infection.

DR. SAMUEL M. PECK: I had the opportunity of observing this patient for a few years. There was never any doubt in the minds of any of the physicians who saw him that he had a syphilitic glossitis. In addition he has an eruption due to phenolphthalein which I have been able to elicit with this drug on several occasions.

DR. LOUIS CHARGIN: I too observed this patient for a long time. He originally applied for treatment because of a condition diagnosed as superficial glossitis of syphilitic nature. There were smooth grayish patches and erosions associated ordinarily with superficial glossitis. The Wassermann reaction of the blood was positive. The glossitis is not an early manifestation of the disease but has been present in this patient for possibly twenty-five years; it is an end-process and does not respond to antisyphilitic therapy. The lesions on the tongue are not regarded, I believe, as a manifestation of the eruption due to phenolphthalein. A patient with such a disorder should not be given arsenic according to some authorities, but certainly he should receive bismuth, although one hesitates to prescribe even that drug because of his advanced age and the possible stimulation of a malignant process.

DR. THEODORE ROSENTHAL: I was glad to hear Dr. Chargin call the condition superficial glossitis. All the lesions of syphilitic glossitis that I have seen have been smooth shiny scars on the tongue, different from what the patient presents. The man is 87 years old, and surely his syphilis is of long, probably of from thirty to forty years' standing. I think the appearance of the tongue does not point to a syphilitic infection.

GRANULOMA VENEREUM. Presented by DR. DAVID BLOOM.

L. C., a Negro aged 35, born in the United States, presents along the right Poupart's ligament a raised hypertrophic scar about 1 inch (2.5 cm.) wide, extending from the outer side of the thigh to the scrotum. At each end of this bandlike lesion is a large crusted ulceration. In the femoroscrotal fold there is a granulomatous ulceration involving the right side of the scrotum and the corresponding surface of the thigh. The granulomatous ulceration started at the scrotum five years ago and extended gradually to the outer side of the thigh. After the patient received thirteen injections of antimony and potassium tartrate the lesion healed with a keloidal scar. It broke down again a few months ago, assuming the present picture.

The Wassermann reaction of the blood was negative. Smears made from the tissue were positive for Donovan bodies.

LYMPHOGRANULOMA VENEREUM. Presented by DR. DAVID BLOOM.

A. J., a man aged 50, an Italian, was seen first on Dec. 10, 1935, one month after the onset of his illness. At that time he presented in the right inguinal region a large hard granular mass, which showed breaking down in one spot. Below and above this tumor there was a hard infiltration of the abdominal wall and of the thigh. It seemed as if there was a marked enlargement of the iliac glands. The patient felt sick and had fever. No history of exposure could be obtained. The Frei reaction was strongly positive. Eighteen injections of antimony and potassium tartrate brought about considerable improvement, and the indurated mass decreased.

The Wassermann reaction had been repeatedly negative, but one week ago it was reported to be strongly positive.

DISCUSSION

DR. DAVID BLOOM: It is instructive to see these two cases together. While in the first case of granuloma venereum the skin is involved and the lymph glands are not, in the other case the glands are primarily involved and the abdominal wall and the integument of the right thigh are secondarily affected. In the latter

case the involved deep iliac glands can be felt. That case is an instance of lymphogranuloma venereum involving not only the pelvic glands but also the skin and the subcutaneous tissue.

DR. MARION B. SULZBERGER: I think the name lymphogranuloma venereum is an extremely poor one, and it certainly tends to make confusion worse. It substitutes a new name which is worse for an old accepted one (lymphogranuloma inguinale) which was bad enough. This old term (lymphogranuloma inguinale) led to confusion on the one hand with Hodgkin's lymphogranuloma and on the other hand with granuloma venereum. The new name for this disease, namely lymphogranuloma venereum, still leads to the same confusion with each of the two diseases mentioned.

DR. DAVID BLOOM: I agree with Dr. Sulzberger that the similarity of both names may confuse the medical practitioner, but it is hardly likely to confuse the trained dermatologist.

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Dall' "Acarus Scabiei" al "Bacillus Anthracis." Communicasione presentata al X Congresso Internasionale di Storia della Medicina (Madrid, 23-29 Settembre 1935).

Contributo Alla Storia Della "Dottrina Parassitaria Delle Infezioni." Sua Connessione Colla Scoperta Dell' "Origine Acarica Della Scabbia." 2 vols. Vol. 1, pp. 160; vol. 2, pp. 60. Siena: Stab. Tip. S. Bernardino, vol. 1, 1935; vol. 2, 1936.

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INTERNATIONAL

NINTH INTERNATIONAL CONGRESS OF DERMATOLOGY AND SYPHILOLOGY
American Secretary: Dr. Howard Fox, 140 E. 54th St., New York.

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NORTHERN NEW JERSEY DERMATOLOGICAL SOCIETY

Henry J. F. Wallhauser, President, Medical Tower, Newark.
Louis J. B. LeBel, Secretary, 165 Grant Ave., Nutley.
Place: Academy of Medicine of Northern New Jersey, Newark. Time: Third Tuesday of January, March, May, September and November.

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George V. Kulchar, Secretary, 450 Sutter St., San Francisco.

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MEDICAL SOCIETY OF THE STATE OF NEW YORK, SECTION ON DERMATOLOGY AND SYPHILOLOGY

Albert R. McFarland, Chairman, 227 Alexander St., Rochester.
Harry C. Saunders, Secretary, 161 W. 87th St., New York.
Place: Rochester. Time: May 25-26, 1937.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA SECTION ON DERMATOLOGY

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L. G. Bembauer, Secretary, 5026 Jenkins Arcade Bldg., Pittsburgh.

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Francis A. Ellis, Secretary, 104 W. Madison St., Baltimore.

Bronx Dermatological Society

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Henry Silver, Secretary, 290 West End Ave., New York.

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Mortimer J. Cantor, Secretary, 907 St. Marks Ave., Brooklyn.
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Place: Barnard Free Skin and Cancer Hospital. Time: Second Wednesday of each month.

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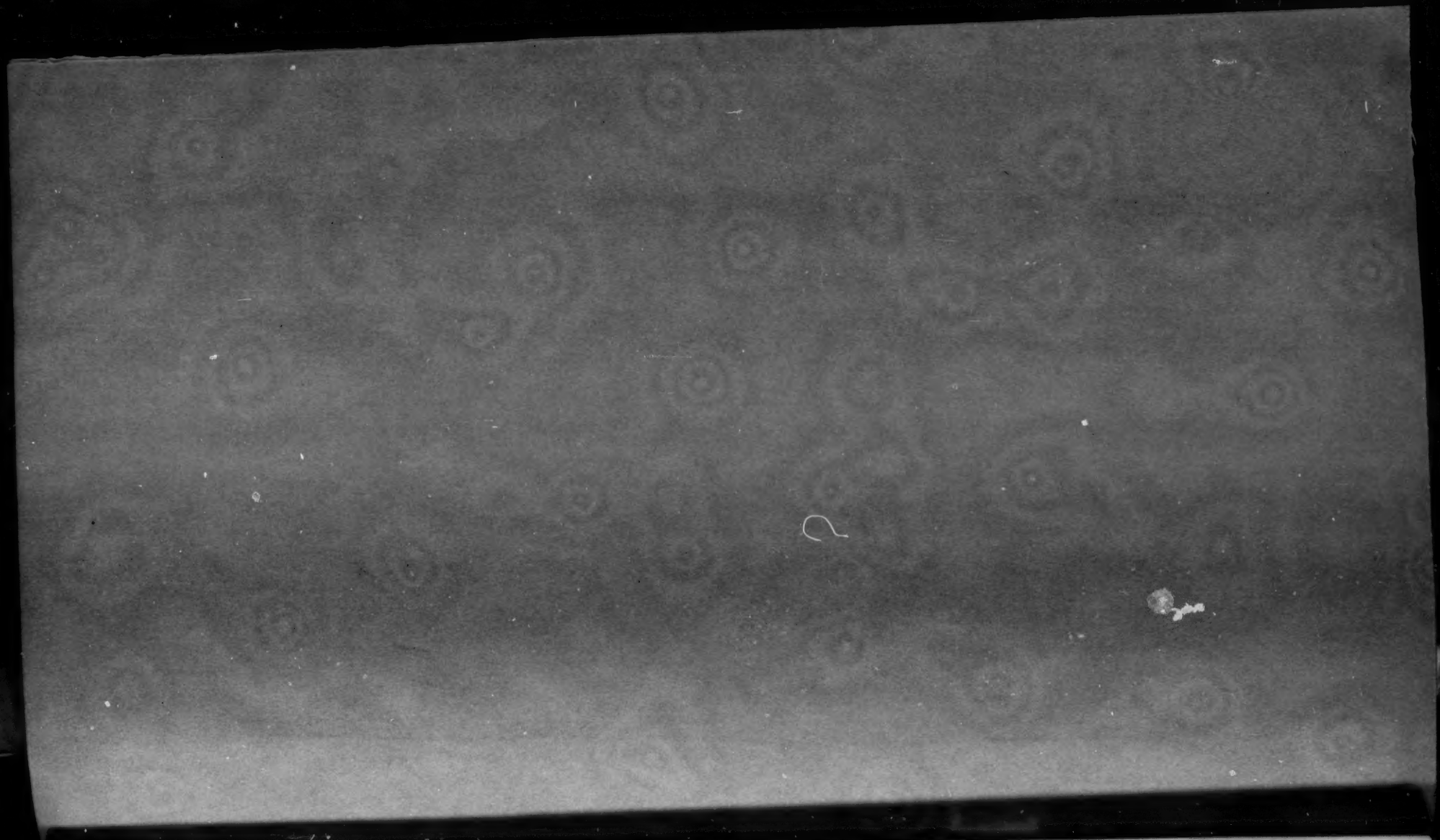
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